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HEARING BEFORE THE

SENATE FACT FINDING COMMITTEE ~~ON~~ WATER

STATE OF CALIFORNIA

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REPORTER'S TRANSCRIPT

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PROCEEDINGS HAD before the Fact Finding Committee on Water of the California State Senate at Room 4203, State Capitol, Sacramento, ~~California~~, commencing at 10:20 o'clock a.m., Tuesday, August 23, 1960.

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MEMBERS OF COMMITTEE:

MEMBER STEPHEN P. TEALE, CHAIRMAN
SENATOR JOHN A. MURDY, JR.
SENATOR CARL L. CHRISTENSEN
SENATOR JAMES A. COBEY
SENATOR RICHARD J. DOLWIG
SENATOR HUGH P. DONNELLY
SENATOR HUGO FISHER
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Tuesday, August 23, 1960, Sacramento, California

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CHAIRMAN TEALE: The meeting will please come to order.

Ladies and gentlemen, this is a meeting of the Senate Fact Finding Committee on Water, and we are meeting today to see the progress report on the study of the possible benefits of an interconnection between generated systems in California and in the Pacific Northwest.

I have a prepared opening statement, which I think I will read in its entirety, because I think this is a rather important subject.

The study was authorized by S.B. 1129 of the 1959 legislative session. The authors of this bill, incidentally, include myself and four other members of this committee -- Senators Cobey, Fisher, Slattery and Miller.

The Department of Water Resources engaged H. Zinder and Associates, of Seattle, to make the study. Specifically, the work has been in the hands of Mr. Sol E. Schultz of this firm. Mr. Schultz is a former chief engineer of the Bonneville Power Administration, the Federal power marketing agency in the Pacific Northwest. We will hear from Mr. Schultz this morning.

Speaking for myself, and I feel sure for others, the introduction of S.B. 1129 was prompted by our concern that electric power, and reasonably priced electric power, would be needed in large quantities for operation of a State water program.

Energy requirements for all purposes are expected to go up rapidly in California. But the quantity expected to be consumed in operation of Federal and State water projects will increase even more rapidly.

I would like to cite just a couple of figures on this. They came from data assembled by public and private agencies in California for a study made by the Bonneville Power Administration.

These figures show that total electric energy requirements in northern California will double between 1960 and 1970 and then redouble between 1970 and 1985. I am using figures for the month of August for those years. They are 2.8 billion kilowatt hours in 1960, 5.6 billion in 1970 and 11.9 billion in 1985.

But for pumping, just in the Federal system with expected additions, and in the proposed State system, the increase is much faster. The pumping requirements are some 42 million kilowatt hours in 1960. There is a four-fold increase, to 185 million kilowatt hours, by 1970. And then this figure triples by 1985 to 557 million kilowatt hours.

Under the circumstances, we in California surely are only being prudent in looking for sources of electric energy which satisfy or help satisfy these requirements. As our irrigating friends in the valley know, the cost of power is a large factor in determining the cost of water to the farmer.

Now, I understand that the original proposal for export of electric energy from the Federal Pacific Northwest System came from the Federal agency there, the Bonneville Power Administration. Frankly, they found surplus kilowatts on their hands and the failure to sell these kilowatts was affecting their repayment schedules. A proposal was made to sell this power to the Pacific Gas and Electric Company. A 230-kilovolt line from Klamath Falls to the Pitt River Plant #3 of the Pacific Gas and Electric Company was to be the means of delivery for so much power as P. G. and E. felt it could absorb into its system.

Next in this chronology, apparently, was introduction

in the California Legislature in April of 1959 of the bill authorizing the study we are going to hear about. Then in May of 1959, the Interior and Insular Affairs Committee of the U. S. Senate asked the Secretary of the Interior to make and present to that committee a study of possible interconnections.

This study was completed by Bonneville Power Administration and a report made in February of this year. The report states that only the 230-kilovolt line is financially feasible on the basis of surplus power.

I believe it was unfortunate that the Federal study was confined only to the subject of disposal of so-called surplus energy from the northwest to California, and not to other benefits that might accrue from an interconnection, both in California and in the Bonneville Power Administration service area. The authorization for our California study, on the other hand, was designed to give weight to other possible benefits.

There is a further complication in this situation, which concerns the public preference clause in Federal law for power developed from Federal projects. The northwest in the past has been properly fearful that sales of power from Bonneville Power Administration into California might give preference to California public agencies over non-preference customers in the northwest and over public agencies there seeking to get on the line later.

I think there is an obvious parallel to our county of origin and watershed protection acts for water development, and most of us, at least, can sympathize.

It is my understanding that the Attorneys General of Oregon, Washington and California have agreed that there is doubt about the application of the public preference law even if a privately financed intertie were the means of transmission.

I want to put in the record my personal stand that California agencies should not attempt to gain the position of preference customers for power transmitted out of the present

Bonneville Power Administration marketing area.

It is a legislative matter for the United States Congress to provide this protection for northwest users. If substantial benefits are shown for an interconnection, I believe Congress would be willing to act.

Now, before we introduce our first witness, I want to introduce the members of the committee sitting with us today.

We have on my far right, Mr. Carley Porter, Chairman of the Assembly Water Committee. We are very happy to have Mr. Porter with us. He has been very faithful. I am sorry to say I have not been able to attend his committee meetings as regularly as I would like to, or as faithful as he has; however, maybe we can correct that in the future.

Next to him we have Senator James Cobey from Merced and Madera Counties; Senator Richard Dolwig from San Mateo; Senator Ed Regan from Trinity and Shasta.

On my left, Senator Hugh Donnelly from Stanislaus County; Senator Carl Christensen from Humboldt County; Senator Ed Johnson from Yuba and Sutter Counties; J. Howard Williams from Tulare County.

Our first witness this morning will be Mr. Sol E. Schultz, and I understand Mr. Brody would like to introduce him and make a statement.

MR. RALPH BRODY: Thank you, Mr. Chairman. We appreciate this opportunity to make this presentation for your committee today.

By way of history, I would like to state that in the 1959 session of the Legislature, as the Chairman has already mentioned, the Governor asked for funds which the Legislature provided, for the conducting of studies with respect to the feasibility of an extra high voltage common carrier power interconnection with the Pacific Northwest.

Several of the members of this committee co-authored that Act.

We are here today to report on the present progress of that study.

This is not the first time that a power interconnection with the Northwest has been under discussion or study. As early as 1948 the Bonneville Power Administration, the Bureau of Reclamation, and the Federal Power Commission undertook studies on the subject. In 1953 the Federal Power Commission issued a report which concluded that a 230 kv line would be feasible.

But historically any such major interconnection has received a negative reaction in the Pacific Northwest and little attention in California despite the tremendous benefits which it could provide for each area. The absence of such a line has resulted to date in a loss of great economic benefit to each area as well as the loss of the use, which the West can ill afford, of a great natural resource.

The opposition of the Pacific Northwest has been based upon a fear that once Federally developed power has been sent into California, it will not be returned when it is needed there. They also fear that the Federal public power preference law would be asserted by public agencies in California against the private purchasers of Federal power in the Northwest. While there has been no intention upon the part of California to permit such a result, the position of the Northwest in this connection is understandable. The Bonneville project was designed and constructed to meet the needs of the Northwest and its service area was viewed as being that territory. The project was developed to meet the existing and growth needs of that area.

I confidently believe that we in California have always respected the views of the Northwest in this regard. We have fully recognized the prior right of our neighbors to the north with respect to this power. But, nevertheless, that fear persisted until very recently to the point where any consideration of an interconnection was viewed hostilely by those who reside in

the present Bonneville service area. This has resulted in a loss of revenues to Bonneville Power Administration which otherwise would have been available to insure the retention of low power rates; has resulted in the wasting to the sea of a great resource; and has resulted in a failure upon the part of California to receive the economic benefit of the use of low cost energy which otherwise could have been available.

Recently the attitude in the Pacific Northwest toward the exportation of surplus energy to California has become more favorable. The people residing there have begun to realize that the sale of surplus power to California can be of a tremendous benefit to them as well as to California. They have also, as a result of assurances offered by Governor Brown, as well as Senators Engle and Kuchel, come to a realization that California did not wish to import power for which there is a need in the Northwest. Our Governor has repeatedly stated that California would agree to whatever assurances the Northwest considered necessary, including Federal legislation, to protect the priority of that area with respect to Federal hydroelectric power generated in the Northwest.

Prior to the time that the funds for the study now being conducted were appropriated, Governor Brown contacted Governor Rosellini of Washington and Governor Hatfield of Oregon on this entire subject. All three of the Governors agreed that the matter merited serious study. They were all aware of the great benefit which could inure to the entire West as well as their own states if such an interconnection were feasible and could be worked out on a satisfactory basis. They were aware that a common carrier line would be of extreme value, both to the public and private agencies in the Northwest and in California.

Insofar as California was concerned, Governor Brown recognized that in addition to water resource development,

California, as well as the entire West must also satisfy the other needs of a rapidly expanding population and economy. Low cost power to some extent could offset the increase in the cost of water, the development of which is, with each new project, becoming more costly. More power could assist in attracting industry to the West. It was recognized that a common carrier extra-high voltage power interconnection could provide not only a more efficient and economical use of existing resources, but also could facilitate and expedite the development of other resources, such as water.

It was for these reasons that the studies were begun. In February of this year, Bonneville Power Administration, pursuant to a resolution of the Subcommittee of the United States Senate Committee on Interior and Insular Affairs, submitted a report on the feasibility of the construction of a high voltage interconnection. It was concluded in that report that only a 230 kv line was feasible and should be constructed. However, in reaching its conclusion the Bonneville Power Administration confined its study to a consideration of the sale to California of surplus Pacific Northwest secondary energy only, and restricted the distribution to the areas within California.

Governors Brown, Hatfield and Rosellini considered that it was in the common interest of each of their states to provide for a maximum conservation and utilization of their natural resources. In this instant the three governors felt that, except for the necessity of protecting the priorities of the Northwest with respect to federal hydroelectric energy, State boundaries should not be permitted to form a bar to sensible and economic utilization of all electric energy resources. It was considered that the Bonneville study did not take all relevant factors into account which could and should have been given consideration and that, therefore, this independent study should be undertaken.

The firm of H. Zinder and Associates of Seattle, Washington, was employed to conduct the study. In a few moments Mr. Sol Schultz of that firm will present the preliminary findings of that study to you.

H. Zinder and Associates have informed us that, in their judgment and taking into account all relevant factors, a major high voltage common carrier interconnection, specifically a 500 kv interconnection, between the Pacific Northwest and California, is feasible and would be of tremendous benefit to each area. At the same time the Federal hydroelectric energy to be made available to California by such a line could be made subject to the priority claims of the Pacific Northwest. In other words, they concluded that such an interconnection can and should be built.

Neither H. Zinder and Associates nor we, at this point of time, intend to recommend how or by whom such a line should be constructed or the specific marketing arrangements which would be involved. Such determinations must await final determination as to feasibility and economic alternatives.

I have referred to the fact that we considered that the Bonneville report did not take into account all relevant factors which should be considered in this matter. The study conducted by H. Zinder and Associates considered, among others, the following factors which in our judgment were not adequately considered in the Bonneville study:

1. Benefits of interchange of capacity between the two regions to take advantage of the inter-regional diversity of peak loads.

2. The possible installation of Pacific Northwest hydroelectric generating capacity in advance of Pacific Northwest needs to make low cost firm power available in California.

3. The sale to California on a "pull-back" basis of the prime power in the Pacific Northwest. I might add here parenthetically again that Governor Brown and Senators Kuchel and Engle have all indicated that California does not want to deprive the Pacific Northwest of any power required by it and that California would

join in seeking and providing any safeguards, by legislation or otherwise, that the Pacific Northwest considered necessary to protect its interests in that regard.

4. The use of surplus steam-electric energy available in California to provide additional firm power, by mingling it with available dump hydro in the Pacific Northwest when needed.

5. The advancing of the in-service dates of low cost thermal plants in the Pacific Northwest such as the Cle Elum steam plant and the new Production Reactor at Hanford and integrating their operation with hydroelectric dump energy to serve California loads at a saving.

6. Benefits from coordination of all Pacific Northwest systems with all California systems as contrasted with the benefits of only a Bonneville Power Administration-Central Valley project coordination.

7. Last, but by no means least, they have taken into account the fact that such a common carrier interconnection could provide a greater market for power generated at local projects in the northern part of California and thereby encourage and facilitate the construction of such local projects.

Governor Brown is convinced that the broad study which has been initiated is the first step toward an interstate power arrangement which would be of direct and great benefit to public and private agencies in the States of Washington, Oregon and California. Under this arrangement the Pacific Northwest will be provided with a market which it needs for the power. At the same time its own supplies will be made more firm. California will be provided with a supply of power which it needs and can use and at the same time encourage and firm up the construction of more local water and power projects. It is rare indeed that these advantages can be gained without detriment to anyone, much less with great benefit to each, but this is the case here.

Governor Brown has asked that I publicly express his appreciation for the cooperative spirit with which the Governors of Washington and Oregon have endeavored to reach a mutually agreeable method to maximize power resources in the

West. Such action reflects an awareness of the tremendous advantages to be gained by a braod and comprehensive approach to this matter of mutual concern. By looking at the power situation of the states as a whole, we are able to bring our executive and legislative thinking on these problems up to date with the technological potential which the engineers have opened for us. In the area of competitive technological advance among nations, we know that Russia is presently studying, and indeed constructing, such major extra high voltage power interconnections as we are studying here. We must keep apace with these developments, not only for the sake of meeting international competition, but also for the great benefits which they can produce.

Within our own country comparable studies are being advanced. For example, in the August 8 issue of Electrical World, a major publication in this field, there is an indication that other areas within the United States are considering major high voltage interconnections with Bonneville. The article to which I refer states:

> "New pressures for a Missouri Basin power pool were created in mid-July when an organization called the Mid-west Electric Consumers Association (composed of co-ops and municipal systems) filed a proposal with the United States Bureau of Reclamation.
>
> "The plan calls for federal and non-profit construction of a 345-kv transmission grid, several large thermal generating plants, and eventually a 500-kv tie with Bonneville Power Administration .....
>
> ".....the 500 kv line to Bonneville would run from Sheridan to a 'substantial' point on the West Coast federal system."

Present here today are Mr. Jonel Hill, Public Utility

Commissioner of the State of Oregon and appearing here as a representative of Governor Hatfield, and Mr. Earl Coe, Director, Department of Conservation and Development of the State of Washington, representing Governor Rosellini. I understand that both of these gentlemen will address the Committee shortly. We are deeply appreciative of the splendid copperation we have received from these two men as well as their governors in this matter. We are confident that with the continued united effort which is being put forth on this matter, as well as with the cooperation of your Committee and the Legislature generally, a plan can and will be developed which will be a step forward in the progress of the West. Indications are that in California alone it can be of tremendous and lasting benefit to private as well as public power agencies. It can assist in the development, not only of our power resources, but water, as well as our economic progress.

That concludes my statement, Mr. Chairman, and if there are no questions, I will call upon Mr. Sol Schultz, the man who is eminently qualified in this field, by virtue of his background with the Bonneville Power Administration, as well as other activities in this area.

He is well familiar with the problems and the supplies available from the northwest and matters of this particular type. Thank you.

CHAIRMAN TEALE: Thank you very much, Mr. Brody. Are there any questions from the Committee on Mr. Brody's statement?

Mr. Schultz, we are very happy to have you with us today. I think I would ask only one thing. We anticipate when you get into your presentation that you will probably come to some terminology which we, as members of the Committee, may not be familiar with, referring to the magnitude of

energy, and perhaps you could take a moment and define the terms when you come to them, so we on the committee can understand them a little better.

MR. SOL E. SCHULTZ: Thank you, Mr. Chairman. I will endeavor to explain my statement in non-technical terms.

I am here in response to your chairman's letter of August 3, 1960 to Mr. Banks, Director of Water Resources, to present my preliminary findings from the studies being made by H. Zinder and Associates under my direction of a high-capacity interconnection between the power systems in the Northwest and California.

These studies were authorized in March 1960. Our agreement with the State provides that the work is to be divided sequentially into two parts: Stage I, a general and exploratory study, and Stage II, a definitive study.

Drafts of the Stage I study have been submitted to the States of Washington, Oregon, and California, and we are now proceeding to prepare it in final form for submission to the Department of Water Resources in the latter part of September. The Stage II study will be completed later in the year. On June 15, 1960, I appeared before the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, United States Senate and presented a statement of my preliminary findings regarding the Stage I study. I should like to express here some of the thoughts contained in this June 15 statement.

I have endeavored to summarize for you the findings and conclusions of our work thus far. I must emphasize, however, that these are of a preliminary nature and remain to be confirmed by our Stage II study.

The limits on time and of readily available data have made it necessary for us to make certain assumptions concerning the power systems and generating facilitites

of electric utilities and government agencies in the two areas as a basis for our Stage I studies. Although most of our basic data and assumptions were obtained from, or confirmed by the interested parties, it has not been possible in our preliminary work to obtain the endorsement of the appropriate parties in all cases.

In our Stage II studies, we plan to consult with each of the interested agencies and utilities on these and other pertinent matters in order to substantiate our assumptions more completely.

Here are our findings:

1. Large quantities of power and energy lack a market in the Pacific Northwest and could be made available to California for the next ten to twenty years if appropriate transmission facilities were constructed. Included are:

(a) Up to two million kilowatts of hydroelectric peaking capacity. May I say by way of explanation that two million kilowatts would represent the output of Coulee Dam.

(b) At the assumed 1968-69 estimated level of Pacific Northwest loads and resources, 9.7 billion kilowatt-hours of secondary energy under average hydroelectric conditions. The amount would range from 4.4 billion kilowatt-hours in a critical year to 25.6 billion kilowatt-hours in a good water year.

2. Using the surplus Northwest peaking capacity, one million kilowatts of firm power can be sold to California utilities to be used continuously over the peak hours, 8:00 a.m. to 10:00 p.m., Monday through Friday of each week except holidays. This peaking capacity would be supported by steam energy developed in California and in the Pacific Northwest.

I will interject there to say one million kilowatts would represent the output of two Oroville Dams or approximately so.

3. A peak load diversity of at least 500,000 kilowatts will exist among Pacific Coast utility systems by 1964-65 and will increase in later years.

4. Substantial additions to the firm power supply in the Pacific Northwest as well as California can be obtained by means of a high-capacity interconnection which will permit coordinated operation of the California and Pacific Northwest power installations.

5. Coordinated interregional operation can be attained with a two circuit 500,000 kv transmission connection extending from the Bonneville grid to Southern California.

Let me say here this 500,000 volt transmission line would be the highest voltage in the country when built. It is much higher than anything in existence today, which is 345,000 volts.

The line, serving as common carrier, would have a firm capacity of 1.5 million kilowatts and a maximum capacity of more than 2 million kilowatts.

6. Coordinated operation of the Pacific Northwest and California electric systems would reduce the need for spinning reserves. I mean by that, spare capacity to assure reliable service.

7. The interconnection could make available to public and private agencies in California firm power and energy from Pacific Northwest generating plants which have been (or may in the future be) installed appreciably earlier than the development of loads they are ultimately intended to serve. Provision would be made for recapture of such

power when it can be absorbed by the Pacific Northwest market. This would serve the double advantage of increasing wholesale power revenues in the Pacific Northwest and delaying the construction of higher-cost thermal capacity in California.

8. During the period 1964 to 1974, the first ten years in which a high capacity interconnection could be in operation, it is estimated that the average incremental cost of gas and/or oil for fuel-fired electric generation in California will be 4.0 mills per kilowatt-hour, and that the annual fixed costs of generating capacity will be at least $15 per kilowatt.

9. Power and energy lost in transmission over the twin circuit 500,000 kv interconnecting facilities and associated substation facilities will average about five percent with a load of one million kilowatts and up to ten percent with a load of two million kilowatts.

10. The annual costs of the 500,000 kv interconnecting circuits and required substations, requiring an over-all investment of $200 million, would range from $12 million for Federal construction to $20 million for construction by an investor owned utility.

11. Based on our preliminary studies it is anticipated that economic benefits of $50 million gross would result from the completion and operation of the twin circuit 500,000 kv interconnection in an average water year in the Pacific Northwest.

12. Incremental costs of transmission and generating facilities, necessary to obtain average year benefits on the basis of the plan that was suggested in our study, are $29 million annually leaving a net benefit of $29 million.

13. The average net benefits would be sufficient to

shorten the period for amortizing transmission investment to 10 years and also provide cash benefits during this period amounting to $12 million annually in the form of revenues from the sale of power and savings in its purchase.

14. Provide large monetary benefits to the Pacific Northwest and California after the Northwest supply of Federal hydroelectric energy produced in the Northwest is required for that area's needs.

15. In addition, the completion and operations of the interconnection would:

(a) Increase by 180,000 kilowatts the supply of low-cost prime power in the Pacific Northwest. Now, the term "prime power" is here meant to be power that would be available a hundred per cent of the time.

(b) Revive the coal mining industry in Washington.

(c) Substantially reduce (if not eliminate) Bonneville's revenue deficiencies, thereby alleviating the need for any rate increase.

(d) Provide an incentive to construct new storage reservoirs in Canada which would increase the amount of firm power available to the Northwest and California until it could be absorbed by the Canadian market. This would provide revenue for Canada, add to the Pacific Northwest's firm power supply and delay the construction of steam-electric capacity in California.

(e) Assist the Pacific Coast, and the nation in disasters and emergencies by providing the means of transferring large blocks of electric power into any of the large coastal load centers in the event of major local or area power supply failures.

(f) Conserve natural resources. In some years the savings would amount to the equivalent of 20 million barrels

of oil.

(g) Alleviate smog conditions in California.

(h) Make available transmission facilities for statewide delivery of Trinity and Oroville power as well as the output of other California power projects.

(i) Assure low-cost energy for California's Water Program.

Broadly, we find that the potential benefits to be derived from a common carrier major interconnection between the Northwest and California justify its construction at the earliest possible date. In developing our analysis and this conclusion, we have adhered to our instruction from the State of California that the Pacific Northwest has a first priority to all Federal hydroelectric power developed there.

Basically, as I have stated, we contemplate two 500 kv circuits in the Northwest at appropriate points on the Bonneville system and in California in the vicinity of Bakersfield. As a matter of fact, we are thinking now of extending that circuit still farther south.

I present two exhibits, one of which shows the location of the proposed facilities; the other schematically represents the electrical facilities. We estimate the cost of these transmission facilities will be in the order of $200 million, not taking into account the system reinforcements which may be necessary to support the contemplated interchanges of power.

There appear to be a number of possible plans for developing and utilizing the interconnection which would assure its feasibility. The plan described for the purpose of our Stage I study envisages the delivery to California of one million kilowatts of dependable capacity and surplus hydroelectric energy. In this particular plan, the one million kilowatts of dependable peaking capacity would be provided by a 300,000 kilowatt steam plant at Cle Elum, Washington, and the

purchase of 700,000 kilowatts of hydro peaking capacity, of which there is estimated to be a surplus in the Northwest for years to come. The one million kilowatts of dependable peaking capacity would be supported by energy from the steam powerplant, the interarea exchange of energy (which would increase firm power supply in both areas) and steam-produced energy from California.

In addition, the interconnection would be utilized for the delivery of surplus hydroelectric energy within the limitations of availability of such energy in the Pacific Northwest, its acceptability in California, and the capacity of the interconnection facilities.

For this particular analysis we have assumed that the transmission facilities in California would be constructed by a non-Federal public agency, and in Oregon by a non-profit organization (because we are not certain that any public agency exists in the State that is appropriately constituted to build the transmission facilities.) Analyses planned for the Stage II study will compare the benefits and costs of the interconnection on the basis of its construction by Federal agencies and by investor owned utilities as well as on the basis assumed in the Stage I study.

The foregoing statement of preliminary findings may be altered somewhat in our Stage I report to be issued in September, but I anticipate no significant changes, except that the report should show even greater feasibility than indicated by my testimony before the Senate subcommittee.

I believe that it will demonstrate beyond reasonable doubt that the proposed high-capacity interconnection will provide major and lasting benefits to the Pacific Northwest, California, the adjoining areas, and to the Nation.

As a common carrier and under proper auspices, it would

bring these benefits to the publicly and privately owned utilities, to the communities of the region, and to the Federal Government.

As a former chief engineer of the Bonneville Power Administration and as one who has long been associated with Pacific Northwest-California interconnection studies, I have, perhaps more than anyone else, been aware of the tremendous benefits that could result from a high-capacity interconnection; but I must confess that I had not realized these potential benefits to be as great as our studies now show them to be.

My experience during 40 years in the power business and my studies of major system interconnections in many parts of the country have convinced me that additional major interregional connections are inevitable. Over the years technical developments have made it possible to transmit larger and larger blocks of power longer and longer distances. The proposed interconnection capitalizes on recent technological achievements.

To emphasize further the interregional concept, our investigations to date indicate that any study of the Pacific Northwest-California interconnection should give consideration to the added possible benefits that would result from the coordination of this interconnection with power developments in the Colorado River Basin and proposed large hydroelectric projects in Canada. The State of California has authorized us to expand our Stage II study to include consideration of these possibilities. It is probable that by broadening our studies in this direction we will be able to show substantial benefits in addition to those set forth above.

Pursuant to instructions from the State, in all instances our studies have assumed that the Pacific Northwest would have first claim to any Federal hydroelectric energy

generated there. Moreover, our studies have taken into account the individual interests of the separate areas of the region.

We have given consideration to the effect of the interconnection on the feasibility of contemplated local hydroelectric projects in California, including those associated with irrigation and flood control developments.

Presently, the sites of all, or essentially all, of these proposed hydroelectric developments are located in Northern or Central California and the market for their output is confined to these areas. The interconnection, traversing almost the full length of the State, would open up Southern California markets for these developments. Thus, the interconnection should increase the feasibility of these projects because it will make available a wider market for their power output.

The Pacific Gas and Electric Company has advised us that it would not be interested in purchasing power from an interconnection if it does not build and operate the facility. Accordingly, in our studies we have discounted the area served by that company as a possible market for any power available from the interconnection. The interconnection thus poses no threat to potential markets of the proposed hydroelectric developments in California.

But even if this company eventually changes its position, the effect of the interconnection on hydroelectric development in California would be negligible. The dependable capacity of the interconnection represents approximately one year's load growth in California. The only deterrent effect in California of the interconnection would be to defer the construction of fossil fuel and atomic energy plants, and this will serve to conserve exhaustible fuel resources.

Our report will call attention to the fact that the Pacific Northwest possesses not only large amounts of surplus hydroelectric power, but also important coal mines, which have languished for want of markets and may soon close completely. I speak specifically of deposits in the vicinity of Cle Elum, Washington. With the proposed interconnection, a mine-mouth steam powerplant could be constructed and the mines restored to normal operation. This, in addition to providing California with firm capacity on a long-term basis, could revive a depressed Northwest community.

We are in the process of analyzing the energy requirements for water pumping forecast by the Department of Water Resources for the Southern California Aqueduct. We note that these requirements will be quite substantial by the year 1970 and will increase from then on at a rapid rate. The interconnection would assure the lowest possible cost power for this water pumping. It could also serve to deliver Oroville power to the Aqueduct pumping plants and also to markets in Southern California.

If the Oroville project is deferred, as suggested in the recent interim report of Chas. T. Main, Inc., the interconnection would serve to help meet the power deficiency during this interim period.

On the other hand, if Oroville is not deferred, we believe there could be substantial benefits from integrating the operation of Oroville with that of projects in the Pacific Northwest, giving due regard to the regulation of water releases for irrigation and flood control purposes.

Your letter of August 3, Mr. Chairman, expresses the desire that I explain in detail, and give substantiation for, the additional benefits which our studies show would result from the proposed high-capacity interconnection as compared

with those shown for the lower capacity tie by the Bonneville report.

The larger tie will have a capacity in excess of two million kilowatts of which 1.6 million kilowatts will be dependable. This compares with the smaller interconnection proposed by BPA which would have a capacity of 200,000 kilowatts, all of it non-firm.

With the larger tie an average of about ten billion kilowatt-hours of surplus energy can be transmitted from the Pacific Northwest to California during the first ten years following the completion of the line. This compares with 800 million kilowatt-hours for the facility proposed by BPA.

Let me at this stage just explain what is meant by a billion kilowatt hours. I think perhaps the best example would be to illustrate it in terms of its equivalent in oil. Ten billion kilowatt hours, I think, would roughly be the equivalent for about fifteen million barrels of oil. So when we are talking about these kilowatt hours, ten billion kilowatt hours would be roughly fifteen million barrels of oil.

The larger interconnection would be capable of delivering the surplus energy to load centers in Southern and Northern California, whereas the smaller tie would terminate at the Pit River in Northern California, and delivery to the Northern California load centers would be over existing transmission lines.

The larger tie would make possible the delivery of one million kilowatts of dependable capacity to California utilities without impairing the adequacy of Northwest resources to meet Northwest loads. The smaller interconnection proposed by Bonneville is assumed to carry only dump power to California.

The larger tie, by reason of its size and capacity, could serve as a common carrier facility, not only to transmit

surplus power from the Pacific Northwest to California, but to integrate the various independent power facilities in California. The larger tie would also provide a means of extending the benefits of integration to the Colorado River Basin. No such purposes could be contemplated for the smaller tie.

In summary, even though our studies are still to be completed, I do not hesitate to recommend that steps be taken immediately to assure completion of the high-capacity interconnection at the earliest date possible. Each year's delay in the construction of this facility represents an economic loss of approximately $50 million.

It is sobering to realize that water which could produce power worth $50 million in California is being wasted each year in the Pacific Northwest because of the lack of interconnecting facilities.

It is shocking to contemplate that this situation will continue ten years and longer unless these facilities are constructed. The simple fact is that, without taking into account other major benefits during the life of the facilities, the interconnection will pay for itself completely in its first five years of operation through the conversion of otherwise wasted water to useful energy.

CHAIRMAN PEALE: Thank you, Mr. Schultz.

Before questions by members of the committee, I would like to introduce two members of our committee who have come in. We have Senator Fisher on my far left, San Diego County, and down with the working members of the committee, we have Senator Miller.

Are there any questions by the committee?

Senator Cobey?

SENATOR COBEY: Mr. Schultz, I start with complete

ignorance so far as power matters are concerned.

I notice here on page 2 of your prepared statement where you say large quantities of power and energy would be made available to California for the next ten to twenty years.

Does that mean that this proposed interconnection will give us an interim source of additional power for ten to twenty years at the most; is that it?

MR. SCHULTZ: Not at most, sir. It means that for at least that.

SENATOR COBEY: I see. The question arises in my mind: Where do we go from there?

If we, so to speak, build up a demand that takes this power for ten to twenty years, then is it your thought that we could then go over to these oil facilities or something like that and meet that demand when the Pacific Northwest exercises their right of recapture or pull back?

MR. SCHULTZ: I can see a lot of possibilities after the period in which the surplus existence will have been passed.

By reason of this high capacity tie, it would be possible to reach coal mines in distant areas. It would be possible through the intertie to continue to receive energy, for example, from the Cle Elum mines, and so far as we can see, that power will be made available on a long-term basis, from thirty-five to fifty years.

There are other coal deposits in the northwest and elsewhere. This tie would make it possible for you to reach out into areas, where you can receive these resources, and being paid for by reason of applying the revenues from surplus energy to the cost of facility, then the cost of transmission becomes relatively low and you can afford to reach out.

SENATOR COBEY: In other words, if I understand you

correctly, you point out first that if the cost of these transmission facilities are paid for during this ten or twenty year period, then the cost of subsequent use of these transmission facilities will be relatively low; is that right?

MR. SCHULTZ: That is correct.

SENATOR COBEY: Then, secondly, it is your thought that if this transmission facility is built, the Pacific Northwest will have a market for other power, or power other than hydroelectric power that it would not otherwise have, and therefore would lead the development of these mines and that sort of thing that produce this other type of power.

Is that correct?

MR. SCHULTZ: That is correct. I might say also that the fact that we have the market would be an inducement in the northwest and Canada to install hydroelectric facilities that would be delayed much longer.

So we don't know how many years after the next ten or twenty it would be made available simply for hydroelectric purposes.

CHAIRMAN COBEY: Now, have your studies gone far enough to indicate that if -- as I understand it, you are assuming now that at least on the California end, this transmission line, if we want to call it that, or facility, will be built by a state agency.

I assume from what you have said that the cost of the transmission facility will be borne by those using it.

Do you have any predictions on what the cost of this power will be in California?

MR. SCHULTZ: I think I should explain that we have not assumed, or we don't propose to assume, in our reports, or recommend, that any particular agency build the facilities. We think that that should be a matter that is considered and

determined by the local people.

We will consider the benefits by various agencies and companies, properly evaluating the benefits that would accrue in each particular instance.

So I wouldn't want to say at this juncture that we are recommending anything in particular. We are comparing, if you please.

Now, there was another part of your question I think I missed.

SENATOR COBEY: I wondered what the cost of this power would be.

MR. SCHULTZ: Well, we have looked at it this way: The cost in the northwest is zero, and down in California, it is valued at the cost of the fuel and facilities it would displace.

The benefits then would be the difference between the two, and we haven't undertaken to allocate those benefits.

We have merely said that these would be the benefits.

We have done this, however: We have assumed that since the northwest supply is assumed to be of surplus energy, it is assumed to be for a limited period. We would want the facility to be paid off, or largely paid off, during that period, so that the tie could carry on to serve other purposes, and thereby make power from other sources much more economical.

SENATOR COBEY: If I understand you correctly, then, you are telling me that: Number one, the power would have to be priced competitively in terms of the substitute or alternative sources of power here in California; and then, secondly, it will have to be priced in excess of the cost of repayment of those transmission facilities.

But, at the present time, at least, you don't have any predictions as to what area those two considerations -- or into what area those two considerations will place the

actual cost of power in California.

MR. SCHULTZ: I wouldn't dare to.

SENATOR COBEY: Thank you.

CHAIRMAN TEALE: Senator Williams?

SENATOR WILLIAMS: As I understand your presentation now, there is a surplus of power at Bonneville Dam, is that correct?

MR. SCHULTZ: Well, in the northwest, sir, both the Bonneville Dam and the non-Federal projects.

SENATOR WILLIAMS: And you propose, then, that that surplus would be sent down the Pacific Coast toward the south and then, as California's needs increase and Oregon's and the others coming down, then it would be possible to open up some mines where you would have coal for establishing steam plants. Is that correct?

MR. SCHULTZ: That is right, sir, except that I would recommend the installation of a steam plant in the very early stages, because in a dry year in the northwest, we would still want to have power made available to California so that the coal mine, even during the early period, could be justified.

SENATOR WILLIAMS: Are you trying to build up the coal industry or supply California with power; that is what I am trying to get from your presentation here.

If you have the surplus already in the northwest, why establish the coal mining industry first, or your steam plant first, to utilize the coal industry?

MR. SCHULTZ: Well, we may -- we have a surplus in the northwest. It is not continuous. There are times even during the ten-year period when this power and energy would not be available.

SENATOR WILLIAMS: Oh, I see. I have been trying to find that in here. I think you made a mention of that in

your statement that there would be times when there would be no surplus at all.

As a matter of fact, there would be a shortage; is that correct?

MR. SCHULTZ: Well, I wouldn't go so far as to say there would be a shortage, but I would say no surplus available for delivery to California, and that will be for substantial periods, or there will be limited amounts during quite lengthy periods.

SENATOR WILLIAMS: Supposing there was a definite shortage in the northwest. Then would part of the power developed by this steam plant operation be utilized there and California or the southern part of the Pacific Coast take a proportionate share?

MR. SCHULTZ: Well, my study assumes that that power would be dedicated to California, regardless of the conditions in the Pacific Northwest. That would be a firm power supply for California.

SENATOR WILLIAMS: Now then, for that, then, California would pay a price for the power which, I understand, you haven't determined, but it would pay a price which would take care of the steam plant, the coal that would be used in developing the power, and the transmission lines. Is that right; or would you come down here and say, "Well, Californians are paying so many mills per kilowatt hour. Therefore, that is what you have to pay us" -- even though it might be excessive over what your costs would be in the northwest?

MR. SCHULTZ: Well, I think that is correct, but not entirely so. What we would propose to do is to value the power down here at the cost of the energy it replaces. That is, we would value it, and out of that value, we would accelerate the amortization of the transmission facilities,

say, over a ten-year period, over which the surplus was supposed to exist. Then the benefits over and beyond that would be split between the northwest and California, so the users in California, by my plan -- and incidentally, I don't necessarily recommend that plan. I can't. I just say that there would be sharing of benefits after the people in California purchased this power at the prevailing rate in California.

There would be, if you please, a sharing of benefits which would mean that the power costs would be less here and at the same time you would be paying off the facilities.

Do I make myself clear, sir?

SENATOR WILLIAMS: Not quite. I think what you are getting at -- maybe I had better say what I think.

I keep getting the feeling here from your presentation, what you are saying and what you have read, that California is going to pay a price for the power down here which your power would replace, and, remember, that there is no cheap power in California.

We have developed all the cheap power in years gone by, so anything we develop from here on out is going to be pretty costly.

Now then, you have this surplus which, once every ten years or thereabouts, is -- may not be available. So the point I am getting at is: California may find itself in the position of not only paying for the power at a cost far in excess of what it cost you people to develop it, but we may also find ourselves paying for some of the power that is going to be shipped, as I read your report, to Idaho and to Wyoming and all over the country.

Is that a possibility?

MR. SCHULTZ: Well, I haven't been quite that

ambiguous, sir.

SENATOR WILLIAMS: I am thinking about others that may follow you there. Sometimes California gets signed up with some deals in other parts of the country, and we find out that we began paying through the nose, and I am just interested in protecting our interests a little bit.

CHAIRMAN TEALE: Do you have a comment on that?

MR. RALPH BRODY: I would like to make a comment. If I am incorrect, Mr. Schultz can correct me.

I think you have to view this in two different lights, Senator Williams. First of all, as I understand Mr. Schultz, in order to evaluate the benefits which would derive from construction of such a line, you take into account what the costs of producing this power would have been, had you produced it in California.

That is the maximum, and take the difference between the cost of production off of that power in the northwest, and shipping it down here, and the cost of producing the equivalent amount of power in California.

So that is the measure of the benefit which could be derived from the construction of such a line.

Now, what you charge for this power once you get it into California, will depend on what you want to do as a local matter. To the extent you reduce the price below what it cost to reduce an equivalent amount in California, reduces the amount of benefit you get to that extent.

Now, what Mr. Schultz is also saying is that he would maximize these benefits.

SENATOR WILLIAMS: Let him go ahead here.

MR. RALPH BRODY: He says you maximize these benefits, or, rather, you maximize your cost in the early years to accelerate the payment of the line so that when you want to

bring -- so that you have a paid off line to bring in additional power later on at a much reduced cost. But there is a difference between computing benefits overall, what the benefits will mean to a particular area, and saying what rates you are going to charge for the power.

Am I correct?

MR. SCHULTZ: That is right.

SENATOR WILLIAMS: Ralph, I understand about the second line, how it is going to be reduced in cost, but supposing you don't need the second line. You have still got the high rate for the first.

MR. BRODY: I am saying this particular line after you have paid off this cost and after the northwest has pulled back whatever secondary they want to pull back and you develop new supplies and new supplies come over those, or supposing the secondary energy continues to be supplied over this line.

Once you have paid off this line, that secondary energy becomes less costly.

SENATOR WILLIAMS: Let somebody else pick up the ball.

CHAIRMAN TEALE: Senator Miller?

SENATOR MILLER: Then do I understand that if we get involved in this business, we end up with a power line that has been amortized? We have got our cost back, which puts us exactly where we started, except now we own a power line.

MR. SCHULTZ: That is correct, up to that point.

SENATOR MILLER: Now, it seems to me you have got at least three states involved in this production now -- you have got Oregon, California and Nevada. Why doesn't the Federal Government do this? They are already in the power business.

MR. BRODY: May I answer that?

SENATOR MILLER: I don't care who answers it.

MR. BRODY: We are not suggesting who will build this

line.

SENATOR MILLER: You are not suggesting us?

MR. BRODY: We are now going into the question of feasibility of such a line. We are not recommending by whom it would be built.

SENATOR MILLER: Because, you talk about bailing out some coal people in Cle Elum. I can't find Cle Elum in Contra Costa County.

MR. BRODY: I think Mr. Schultz pointed out that while there are benefits to that area by virtue of reviving the coal industry, there are monetary benefits to California, in addition to this.

When you are constructing a line from one area, you are taking into account all the benefits that exist for all areas. There must be an interest on the part of the northwest to consent to shipping power to California, and this is one of the benefits which could accrue.

SENATOR MILLER: It looks to me like it might be a pretty good Federal project. You are not suggesting we do this, are you?

MR. SCHULTZ: No, sir. I am not suggesting that you or the Federal Government or anyone do it. We will compare the merits of the three cases.

Let me add: As far as the coal mines in Cle Elum are concerned, I am sure -- I am sure nobody in California will want to commit itself to buy power from any steam plant in Cle Elum unless it is to their advantage to do so.

So there is no commitment to buy until it is definitely assured there are benefits, and I think the arrangements we are suggesting here are that California does benefit.

They need a power supply and they can get it from this line.

It doesn't necessarily have to be this one. The fact is, the transmission line makes that power available.

SENATOR MILLER: But this is in the nature of dump power, is it?

MR. SCHULTZ: No, the firm power from the mine.

SENATOR MILLER: Well, hitch it up to some oil wells and you have power, too. I am talking about the surplus power available; that is in the nature of dump?

MR. SCHULTZ: That is in the nature of dump, or surplus power.

SENATOR MILLER: Then somebody has to build some steam plants of one sort or another; if you have the hydro already, that is another problem, but we don't have that.

MR. SCHULTZ: That is right, sir.

SENATOR MILLER: So then, if you take this power, this dump power, then you have to build some steam plants.

MR. SCHULTZ: Well, you have to have steam power to supplement it, because in a critical water year, the power from hydro sources will not be available to California.

SENATOR MILLER: Well, you didn't say anything differently than I said, did you? I said, you have to have steam plants if you are going to use this dump power.

MR. SCHULTZ: That is right, sir; I am sorry.

SENATOR MILLER: Then we either build steam plants here or somebody builds them up there, is that right?

MR. SCHULTZ: That is correct.

SENATOR MILLER: So, all this is the same old dump power business that has been available to us for years, and the reason we rejected it was we didn't want to build any steam plants and go into the power business.

Isn't that true? Hasn't there been power offered to us from Bonneville -- I don't know whether it is the same

amount or not -- prior to this time?

MR. SCHULTZ: I think there has been some proposals to build the interconnecting facilities, but there has been opposition in the northwest, too.

SENATOR MILLER: I see. I guess we thought it was available; they said it wasn't, is that it?

MR. SCHULTZ: Unless there were some severe restrictions.

SENATOR MILLER: Ten, twelve years ago, I heard about this building steam plants to take this extra power from the northwest. In fact, I introduced such a bill one time. I am in much better condition now, fifteen years later, than the bill is. (Laughter.)

MR. BRODY: Before you came into the room, I made a statement to the effect that the Pacific Northwest had, in the past, viewed with some fears and trepidations, the matter of exporting power to California, because they were fearful that the public agencies in California would attempt to assert a priority over private agencies in the northwest, that the project was designed and built to serve that area, and they felt once this power was shipped down here, then California would attempt to assert preference clauses against them.

SENATOR MILLER: Why aren't they using it in the northwest; because it isn't firm power, or because it is surplus?

MR. SCHULTZ: It is surplus.

SENATOR MILLER: But it isn't firm there, either, is it?

MR. SCHULTZ: It is firm if they had a market for it.

SENATOR MILLER: You mean "and they build some steam plants."

MR. SCHULTZ: Well, yes, of course, if they built steam

plants with it, it would be firm, but they have some other conditions in the northwest that I haven't assumed here that actually makes the power firm up there, even without the steam plants.

SENATOR MILLER: What are they?

MR. SCHULTZ: They sell large blocks of what we call secondary power in a critical year that they can interrupt.

SENATOR MILLER: This is something they give away cheap to get rid of, is that the idea -- I am not trying to put words in your mouth. I am trying to understand.

MR. SCHULTZ: Yes, they sell it. It so happens it is no cheaper than the other power, but it is interruptable by either party, either the user or Bonneville.

I might say, "interruptable" -- if the user can't use it, he has the right to discontinue its delivery and if Bonneville is short, it can discontinue its deliver.

So that is why I was reluctant to say they need a steam plant. They can curtail on their power delivery.

SENATOR MILLER: Now, is that a benefit that is thrown in with this package you have contemplated in your study; would we get the benefit of that?

MR. SCHULTZ: We have given priority of that power to the northwest.

SENATOR MILLER: Then that is not taken into consideration in this package that you contemplate.

That is all I have.

CHAIRMAN TEALE: Senator Dolwig?

SENATOR DOLWIG: I have a practical trend of mind and you indicated the transmission line would cost $200 million. Then in your last sentence of your presentation, you indicated the interconnection will pay for itself in complete in its first five years of operation.

Are you talking about the entire $200 million in that sentence?

MR. SCHULTZ: That is right.

SENATOR DOLWIG: In answer to Senator Williams' question, you also indicated there would be some primary rates and some secondary rates. In other words, would you depend upon the transmission lines -- the amount of power that was going to be initially used which might cost more; then, later on, after you used other power, the cost of that might be less? Is my statement correct?

MR. SCHULTZ: I didn't mean to imply that, sir.

SENATOR DOLWIG: Well, maybe you can straighten me out.

MR. SCHULTZ: I see. Well, shall I continue with the approach we have taken; if I may, I will just go into that a little.

The approach we have taken is that the power surplus now in the Pacific Northwest is of no value, as far as they are concerned. If it can be spilled down here, it has a real value in terms of the energy it displaces.

Now, that represents the benefit. Now, out of that benefit, we would say, since it is surplus energy in the northwest and since it has a limited usefulness, we want to pay that facility off as fast as we can, because once it is denied, somebody has to continue to foot the bill.

So we want that paid off.

Now, we dedicate that revenue first to a rapid amortization of the investment and then, anything over and above that in the way of benefits would be split between the two areas.

In other words, California people should not be expected to pay more than the energy that is displaced, and

if there are benefits that accrue beyond that, they should be split with the northwest.

We did not assume any rates for the power, other than the value for that which is displaced.

SENATOR DOLWIG: What did you actually base your money revenue to determine $200 million could be amortized in ten years?

MR. SCHULTZ: This way, sir: We have assumed that it would require something like $29 million a year, on a normal basis, to carry those facilities. We have assumed the value of the facilities. The annual value on an average water year would be something like $58 million.

Now, we have to pay that $29 million, regardless, but obtaining the $58 million, we would have a profit then of $29 million.

It just so happens the annual costs are twenty-nine and the revenues are fifty-eight.

Out of that $29 million, we would apply approximately $13 million a year to accelerate the amortization, so the line would be paid off in ten years, or something like $15 million. In that order, that would leave roughly about $12 million to be split between the users in California and in the northwest.

We have done it just that way.

SENATOR DOLWIG: Let me ask you one further question: Upon what markets and rates did you base the $58 million annual revenue?

MR. SCHULTZ: We have assumed that the charges for capacity -- that is, the kilowatts would be at the rate of $15 a kilowatt year. Now, the rate currently paid by the private utilities or the companies here, as near as we can determine, is between twenty-two and twenty-four dollars.

So that would be a benefit to them and $15 is what a public agency would pay. We have only used the public agency charges, and if sold to private companies, that would be that much greater benefit.

Then, we use a figure of four mills a kilowatt hour for the value of the energy. That is the value. That is based on $2.40 -- we figured that would be the cost of -- $2.40 -- oil. We figured that would be the cost over the next ten years. We just applied those figures, took the gross revenue that would result therefrom, paid off the investment or applied that revenue so it would pay off the investment in ten years; then, what was left over during the ten years would be split.

Now, after the facilities are paid off, and if these revenues continue -- let's assume that after ten years, there is still these gross benefits of $58 million, or whatever it is. Then there is a bigger melon to split between California and the northwest, simply because the line is now paid off.

SENATOR DOLWIG: Mr. Schultz, have you made a survey; do you feel you have a firm market to bring in revenues to the extent of $58 million a year at the rates you just quoted?

MR. SCHULTZ: We think so; yes, sir.

SENATOR DOLWIG: Thank you very much.

CHAIRMAN TEALE: Senator Donnelly?

SENATOR DONNELLY: I don't understand where these facilities coming down in power lines from the northwest would enter California; how far they would enter California, and who would own them.

SENATOR CODEY: Take a look at your diagram.

SENATOR DONNELLY: Let him answer.

MR. SCHULTZ: I have appended to my statement, and I mentioned in my statement, there were two exhibits. If you

will look at the first, Exhibit 1, in my statement, sir.

MR. BRODY: At the end of the statement, Senator Donnelly, there are two sheets attached.

MR. SCHULTZ: Now, this is the way which we now propose to route the 250,000 volt lines. You will see there that we have a connection on Redmond, Oregon, Klamath Falls, Oregon, in the Shasta area; then, in the Bay area; one near Fresno, and I show one here at Bakersfield. The one at Bakersfield, I must say, we just arbitrarily put the line there, but our studies may show farther south after we have discussed this with the utilities in California more.

Now, as to ownership, we are naturally not making any recommendations. We think that that should be for the people of the area to decide.

SENATOR DONNELLY: How are the people going to benefit by paying those off in five years, if after they are paid off they are owned by a private utility who then increases their rates, because of the value they have got in those power lines and increased the cost of the electricity to the consumer?

MR. SCHULTZ: Would you mind, I think that is a question Mr. Brody should answer.

MR. BRODY: Senator Donnelly, there are no recommendations in this report with respect to how the line should be built or by whom.

The purpose of this study has been to determine the feasibility, engineering feasibility and economic feasibility of constructing such a line.

Once you determine that it is economically and engineeringly feasible, and several alternatives will be described in the report -- it is, as I understand from Mr. Schultz, as to what kinds of benefits will be derived monetarily if it is constructed by one agency, the state,

the Federal Government or another.

Then it is up to the state or whomever is interested in this matter to determine how it is to be done. But this is principally now an engineering study.

SENATOR DONNELLY: But how can you determine that it is economically feasible to build this when we don't know -- you say it is strictly from an engineering standpoint. Anybody can build almost anything if they have the funds to build it.

I recognize that, and you say it can be built. We would assume that before you started your studies. Now, I think the important thing is: We have heard all along these lines are going to be constructed and they are going to be constructed by some entity and they are going to be paid for out of the money that the people in California pay for the electricity.

Now, if that is the case, then at the end of the five-year period that the people in California may have paid -- I don't know whether they do or not -- they may have paid an exorbitant fee for the line, who are they going to be owned by?

That is very important to me in the ultimate.

MR. BRODY: I believe you will find in the final report, as I understand Mr. Schultz's contemplation of his final report, Senator Donnelly, he will present several different possibilities under which the lines can be constructed and show that it is economically feasible, not only engineeringly feasible, for this to be done.

He will show the benefits which will accrue before and after the payoff of the line itself. So, by whomever it is constructed under these particular alternatives, it will show economic feasibility, as I understand his statement. Is that correct?

MR. SCHULTZ: That is correct.

MR. BRODY: May I -- excuse me -- may I say something

in supplementation of that?

Again, I want to emphasize, at this particular point of time and that is the Department and the Governor, independently of what Mr. Schultz is going to say, are not saying this line should be built under any particular auspices.

We want to see his final report. We have been informed by him it is economically feasible under any one of several.

SENATOR DONNELLY: Mr. Brody, the thing that puzzles me is the fact that we have political subdivisions that not only distribute their own power, but have to have that power wheeled to privately owned utilities.

Now, in the State of California, we have such political subdivisions transmitting power, like the irrigation districts, and then we have the system that is put in effect in Sacramento, where they wheel their power down from Shasta Dam and get the benefit of it here, and the thing that I was interested in was who is going to own this power line, because it is apparently going to be paid for directly by the people in five years.

They are going to charge them enough so it will be paid for in a very short period of time. It seems to me that the people should get some reduction in power and not have the cost to the people of California based entirely on what the cost of other power in California amounts to.

In other words, we have to assume, as I understand the engineer to say, where the surplus power in the northwest is not worth anything, it is worth considerable in California, and in addition to that, I suppose we are going to have to pay for transmission lines to bring it down here.

What I am particularly interested in now is getting it to the people of California at the lowest possible cost.

MR. BRODY: As I understand Mr. Schultz' statement, it

will provide or can provide under these auspices any one of several alternatives, lower cost power in the area.

Now, am I correct in that?

MR. SCHULTZ: That is correct.

SENATOR DONNELLY: Lower than what? Lower than the irrigation districts furnish; lower than what the Central Valley Project furnishes; or lower than what -- the Pacific Gas and Electric?

MR. SCHULTZ: It is lower than the prevailing cost of power and energy to the major utilities in the area.

CHAIRMAN TEALE: Senator Fisher?

SENATOR FISHER: I am a little confused, Mr. Schultz. I may have to cover something that you have already stated, and I just didn't understand.

I understand that your basic $50 million per year revenue to whatever -- whether it is a private or public concern that builds this thing -- is based on a four mills per kilowatt hour delivery charge at a wholesale rate.

MR. SCHULTZ: That is correct, sir.

SENATOR FISHER: And you don't make any distinction in figuring this four mills, as to whether it is sold to P.G. & E. or Southern California or SMUD or whom.

MR. SCHULTZ: That is correct.

SENATOR FISHER: Is that four mills throughout the entire length of the tie, or is that an average figure?

MR. SCHULTZ: Well, we have used for our present study -- incidentally, for the study we have assumed that power would be delivered to Southern California. We have done that just for the purpose of this particular study. That may not be so in the actual operation, and we have checked with the people in Southern California and have found that the expected costs of oil would be such that we could

use a figure of about four mills a kilowatt hour for the cost, and that is the figure we used.

Naturally, we would expect to displace by an interconnection of this kind, the most expensive power that is being burned in the area, because that should be first to go off, and we figured that would be on the order of four mills a kilowatt hour.

SENATOR FISHER: Now then, the $29 million amortization is amortization for what elements of the system; just the line, or does this include the steam plants?

MR. SCHULTZ: No. The transmission facilities only. The cost of the steam plant would go on.

SENATOR FISHER: How much is that?

MR. SCHULTZ: Oh, the steam plant would cost, and we have used rough figures for that -- the cost of the steam plant would be roughly about $6 million for the plant itself, annual cost. The cost is about 2.2 mills an hour for the energy. The total capital cost of that plant would be on the order of about five to six million dollars -- the annual cost, I mean.

SENATOR FISHER: Then the $58 million revenue of four mills only pays for the transmission line, and the acceleration on amortization, and leaves the $13 million to be split, as I understand, between California and the northwest?

MR. SCHULTZ: It also includes the normal charges. Now, we didn't accelerate the amoritization of the steam power plant, because that would be on a long-term basis.

SENATOR FISHER: I understand; that was not part of the $58 million.

MR. SCHULTZ: The revenue from the power produced by the steam plant would be part of the $58 million, and the $29 million that I assumed would pay for the steam plant on

the basis of normal finances, not accelerated financing.

SENATOR FISHER: Then the $29 million does include the steam plant, as well?

MR. SCHULTZ: It does; it includes the steam plant, that is right, sir.

SENATOR FISHER: That is what I wanted to know.

The $29 million repayment, then, includes the cost of amortization -- however -- the operation, as I understand, of the steam plant, as well as the amortization of the transmission line.

Now, does it also include any maintenances; any other maintenances?

MR. SCHULTZ: It does.

SENATOR FISHER: So that includes both the amortization and the operation of both the steam plant and the line.

MR. SCHULTZ: On a normally financed basis.

SENATOR FISHER: On a normally financed basis. Then you load above that, I understand, for rapid amortization.

MR. SCHULTZ: Of the transmission facility.

SENATOR FISHER: That leaves $13 million a year to be split between the north and south.

MR. SCHULTZ: That is right.

SENATOR FISHER: Now, what is the cost of the power from Bonneville Power Administration?

MR. SCHULTZ: As I say, I haven't gone into that as to what it costs. I have gone in it from the basis of what it costs them now, which is zero.

SENATOR FISHER: Are they willing to deliver it to this intertie for zero?

MR. SCHULTZ: Well, I have looked at it this way, sir: It is surplus energy, and it is energy that is otherwise wasted, and I looked at it from the standpoint that since it

can't be guaranteed to California, the revenues from it must be used to compensate those people who do secure the risk in the transmission facilities, in a way which we are sure it is paid at the earliest possible date.

Now, what would happen, as I see it, after the facilities are paid off -- or, let me put it this way: Before the facilities are paid off, Bonneville would agree to dedicate a portion of its revenue it would get on a normal rate basis to the payoff of that transmission line, simply because if it built those facilities itself, it would have to do the same thing.

SENATOR FISHER: Just like a gas company putting out another station.

MR. SCHULTZ: It is on the same order. We believe that if we show feasibility and show that they are benefiting by this, and after the facilities are paid off, that Bonneville and the northwest then would benefit to a higher degree, that it would make it a very worthwhile arrangement for both California and the northwest.

SENATOR FISHER: If, on the other hand, rather than dedicating their revenues from the project to amortization, they just charge two mills, for instance, then the price down here would be six mills, would it not, in order to make the $50 million -- you would have to jump that, wouldn't you?

MR. SCHULTZ: You mean --

SENATOR FISHER: If they charged for it.

MR. SCHULTZ: If they charged the two mills -- well, if they charged the two mills on the basis of surplus, then I would, if I were the purchaser, suggest to Bonneville, then, that they pay or help pay the transmission costs.

SENATOR FISHER: Well, it is a bookkeeping thing, isn't it? You either give it outright or take the two mills

and reinvest it in the line.

MR. SCHULTZ: Well, if I amortized in ten years, on that basis, if I were bargaining with Bonneville, I would want Bonneville to share with me in the rapid amortization of these facilities.

I mean, that is a bargaining position, I believe, the areas will get into.

I think it represents fairness to both California and the northwest, because, say what you will, that intertie has to be feasible to the people of the northwest and to the people in California. Somebody has to underwrite it and there has to be some inducement.

SENATOR FISHER: Let me ask you one further question: After the surplus is no longer available from the northwest, what benefits would California have in such an intertie or interconnection line, if any?

MR. SCHULTZ: Well, we get back to this steam power plant. That means you would be able to deliver power from this steam power plant as long as the resources remained there.

SENATOR FISHER: Is there any reason to believe that the steam power would be produced in a much lesser figure in Washington than California?

MR. SCHULTZ: Yes, sir. That would be it.

SENATOR FISHER: How much less?

MR. SCHULTZ: Well, it would appear to us that that power could be made available at, oh, about 2.2 mills a kilowatt hour, and I have been using four mills down here.

SENATOR FISHER: You had better investigate the coal mines in Mt. Diablo, down in Senator Miller's district, maybe you can interest him in it.

MR. SCHULTZ: I will be glad to.

CHAIRMAN TEALE: Senator Regan?

SENATOR REGAN: I have a couple of factual questions I would like to get settled in my mind as to cost.

When you were reading from your paper, you said, in effect, that the power and energy loss in transmission over the circuit, the 500 kv connecting facility, and I think you said, associated substations, would on the 1 million kilowatt transmission, be a loss of about five to seven; with a load of two million, ten per cent.

My first question is: Is that a normal loss or average loss?

MR. SCHULTZ: We think for transmission it is even less than a normal loss, but I would say for our purposes here that it is within a normal range of conditions.

SENATOR REGAN: I believe you said that an overall investment in the interconnecting circuits would be approximately $200 million, and then a couple of pages later, you said we estimate the cost of these transmission facilities will be in the order of $200 million, and then this phrase that I would like to have you explain: "Not taking into account the system reinforcements which may be necessary to support contemplated interchanges of power."

What additional costs would there be, when you use that phrase?

MR. SCHULTZ: We naturally would have to -- not we, but the systems connecting to these facilities, would have to be reinforced, either to bring the power to, or take the power away from these facilities, but we feel those charges may not necessarily -- as a matter of fact, we feel quite strongly in many respects that these charges are not necessarily chargeable against the interconnection. They will reinforce the local systems.

SENATOR REGAN: What I am thinking about is: What is the overall investment? You said "In the beginning." I am interested in what the overall investment, notwithstanding the final decision who is going to be the investor.

MR. SCHULTZ: Our feeling is the overall investment chargeable to these facilities will be $200 million.

SENATOR REGAN: Then an additional investment in the system reinforcements, how much would that be chargeable to somebody else, then, or to some other agency or facility, or whatever you wish?

MR. SCHULTZ: Oh, that at the moment is somewhat indeterminate until we get into those -- the amount is indeterminate, but -- I don't want to burden you with this, but I want to make sure that I clearly state that the charges, to our way of thinking, would be charges that would be incurred by these agencies if the tie were not there, anyway, because it serves a purpose of reinforcing their systems.

I hope I make that clear.

SENATOR REGAN: You make it clear to me. What I have in mind is this: Assuming one agency, say, the Federal Government -- there is going to be a suggestion the Federal Government does all of this. This is just as an example.

What I am trying to find out is whether or not there is an overall investment -- so the government would do it. We don't want to be spinning our wheels. I am just looking for some information.

MR. SCHULTZ: Let me put it this way, at least what our assumptions presently are: Our feeling is if, for example, we deliver the power, say, in the vicinity of Fresno or Bakersfield, then the local power company would make the connections and provide the funds for that, if made at Bakersfield or further south. The local utilities would

provide the funds.

Up north, the same set of conditions would prevail.

So far as the investment is concerned, we have looked at it in terms of broadly $200 million.

SENATOR REGAN: Now, if we were wheeling two million kilowatts over the interconnecting system, in order that you could wheel that, do you have to build additional power reservoir facilities in any particular area in order to reach that contemplated two million?

MR. SCHULTZ: Not a reservoir facility, sir.

SENATOR REGAN: Is it only the steam plant that you have?

MR. SCHULTZ: That is the steam plant.

SENATOR REGAN: Only the steam plant?

MR. SCHULTZ: Now, let me make this clear, too, as far as the steam plant is concerned: The steam plant is not absolutely necessary, as far as this is concerned.

We think it aids the economy, and particularly, the supply of power to California. So the steam plant is a suggestion for the particular plan we have shown here.

SENATOR REGAN: What I am trying to get, again, is the matter of investment. If the power is presently available in the Pacific Northwest, so that if you built the system today at a cost of, say, $200 million, you would then have available for transmission two million kilowatts.

Then we have a figure, but in overall investment, if we built the system and then had to build additional facilities in order to provide the power to wheel, I am trying to find out then if that is necessary, then there is an additional figure when you reach the matter of investment.

MR. SCHULTZ: Yes. We are proceeding -- I will go back to that perhaps just a little differently. We are proceeding

on the assumption that the transmission facility in the areas have to be enlarged by reason of the growth in load, anyway, and those will be needed, and it will be the local utilities who will build those.

It wouldn't be moot to build out from this. The first think you know, we would enlarge the areas of service, the scope, and perhaps the identity of the agency, too, in building it.

It would be for the local utilities to build that, and that charge would not be against the interconnecting system, because there would still be other benefits accruing from these interconnections.

We will look into that in more detail. We have had no opportunity to do so yet.

SENATOR REGAN: Have you reached a stage in your study where you are planning a figure like the transmission of "X" number of kilowatts over a population of California in what number? In our other studies, we say we have sixteen million here and we have in the foreseeable future forty million.

MR. SCHULTZ: No, we haven't done that, Mr. Senator, for the reason we find out the loads are so great; they can load these particular facilities up to their full capacities, and that is where we stopped. If there is more power available in the northwest and the demands are greater than we contemplate, then all that would have to be done is build more facilities.

SENATOR REGAN: One final question: Does your study anticipate the full use of California's power potential from all sources?

MR. SCHULTZ: That is right. Certainly, all hydro potentials.

SENATOR REGAN: So that when you make a finding on that you will have taken into consideration that in the California Water Plan, where they contemplate, I think, it says 260 major dams and reservoirs and so on, that you are taking into consideration the full power potential that California could generate and use, and this would be in addition to that?

MR. SCHULTZ: That is right. We find that in, say, 1970, California will require something like eighty billion kilowatt hours of steam generated energy alone, steam or atomic.

That is not counting the hydro. We have discounted the hydro. We are only talking about transmitting ten billion out of the eighty. We think that the figures, of themselves, are convincing that we would have no problem of disposing of power.

SENATOR REGAN: One final question: Does any of your study plan to retire any source of energy in California?

MR. SCHULTZ: No, sir.

CHAIRMAN TEALE: Senator Miller, and then Senator Christensen.

SENATOR CHRISTENSEN: I want to carry out Senator Regan's questioning a little more.

You state on page 10, "We are in the process of analyzing the energy requirements forecast by the Department of Water Resources for the Southern California Aqueduct."

I believe you also said that you concluded that you had a firm market for any of this power which would return $58 million a year once the project is completed.

In the event the Southern California Aqueduct were never built, would your answer still be the same?

MR. SCHULTZ: Yes, sir.

SENATOR CHRISTENSEN: In other words, you do not regard this as any part of the Southern California Aqueduct pumping requirements?

MR. SCHULTZ: No, sir. It is just a question how you would wish to allocate the benefit, insofar as the Aqueduct is concerned, or how you want to apply the revenues.

It doesn't matter so far as we can see. It doesn't affect the feasibility in that respect.

MR. BRODY: May I volunteer there: What I believe Mr. Schultz is saying, is that if the Aqueduct is built and if this line is built, that this is a source of low cost power for the pumping on the Aqueduct.

SENATOR CHRISTENSEN: What I had reference to, Mr. Brody, was a statement here that one of the proposed benefits is the availability of cheap power for pumping under the Aqueduct. I think Mr. Schultz has said that is not a condition, and there is still a firm market in his opinion.

Now, in the event that be not built and the cost of the project, the transmission line, which I believe was estimated to be $200 million -- would the cost be any less by reason of not contemplating differently of power under this transmission line to the pumping plants?

MR. SCHULTZ: No, it would be the same. We have assumed power would be delivered at certain key points in California, and if the pumping plants picked up that power, the cost of the facility to deliver that power locally would be chargeable for the pumping plants themselves.

So the cost would be the same.

SENATOR CHRISTENSEN: Have you given any thought or reached any conclusions as to any lesser costs for the building of a transmission line to a point further north than Bakersfield, merely to serve northern California?

MR. SCHULTZ: No, we haven't done so, for the one reason that our instructions from the state -- from the Department, are that we were to see how the benefits could be spread over the entire state, and so we have considered it as a whole.

Now, if we shorten the transmission districts, then we restrict our market and the big market is in Southern California, based on our present study.

SENATOR CHRISTENSEN: In other words, then, if I understand you correctly, a transmission line serving only Northern California terminating in Northern California, would not be possessed of the same firm market that you referred to?

MR. SCHULTZ: That is correct.

SENATOR CHRISTENSEN: So that in order to do this thing at all, we have to build this, or someone would have to build this line down in Southern California, the transmission line?

MR. SCHULTZ: That is correct.

SENATOR CHRISTENSEN: Now, have you, in the course of your studies, in determining that figure of $200 million, arrived at any conclusion as to what the cost of it would be to develop an intertie just terminating in Northern California?

MR. SCHULTZ: We haven't. We have not done so, first, because some studies have already been made by the Bonneville Power Administration in that particular respect; and, second, it would violate our instructions, because our instructions were: "Treat this as a major integrating facility," and we couldn't integrate all of California with the northwest, except by making a very high voltage, high capacity tie that traversed practically the entire length of the state.

SENATOR CHRISTENSEN: Assuming you are possessed of any impunity for violation of the instructions, are you in any position to give us any estimate of what it would be to

terminate in Northern California?

MR. SCHULTZ: No, sir.

SENATOR CHRISTENSEN: Any percentage?

MR. SCHULTZ: I could give you a percentage as to the cost, but then I would have to make a study as to what the benefits would be, and if you recall, I stated here that for our present purposes, we have discounted the market served by the Pacific Gas and Electric Company for our present purposes.

So it would mean that the market would be very much restricted, and therefore feasibility would be definitely in question if this interconnecting facility doesn't go all the way to Southern California.

SENATOR CHRISTENSEN: So our conclusion -- the only way you can positively state today that it would be economically feasible would be to complete the project at a cost of $200 million, which would bring the line into Southern California?

MR. SCHULTZ: Yes. Now, you might do this: You might build it in installments. You might build the first line one year, and a year or two later, build the second line, which would cut the cost maybe by about forty per cent. You wouldn't have to build both lines together. You would have restricted benefits, of course, but you would still have that market down there and you could build it in installments, so it wouldn't require the initial investment of $200 million.

We haven't explored that line, either.

SENATOR MILLER: Mr. Chairman --

CHAIRMAN TEALE: Mr. Brody?

MR. BRODY: I was going to say in connection with Senator Christensen's inquiry, that one of the benefits that Mr. Schultz has evaluated here, was the ability of this line to market power from local developments in the

northern part of California elsewhere than in Northern California.

In other words, power which is generated from projects such as Placer County Water Agency or any other developments in the north could be shipped over this line, assuming other arrangements could be made with purchasers in Southern California, rather than restricting it to Northern California alone.

That is one of the benefits which is considered in the evaluation of a major intertie throughout the state.

SENATOR CHRISTENSEN: Wherever the line exists, it could be used for the purposes for which it was built.

MR. BRODY: And the fact that this is one of the benefits enlarges the market and makes for feasibility those projects which are being considered in the northern part of the state for power development.

It enlarges the market and thereby makes possible earlier more projects.

SENATOR CHRISTENSEN: Would this transmission line, so far as your studies indicate, duplicate any presently existing transmission lines?

MR. SCHULTZ: No, sir.

SENATOR CHRISTENSEN: CVP or private?

MR. SCHULTZ: As a matter of fact, our feeling is it would increase their faculty for the purposes we talked about.

CHAIRMAN TEALE: Senator Miller?

SENATOR MILLER: I would like to comment on that a little bit before I go on to something else.

Then, do I understand that you are suggesting to Senator Christensen that none of the private facilities or the Central Valley Project facilities have additional capacity,

other than that now being used at their peaks?

MR. SCHULTZ: Well, they don't have capacity in terms of the amount of power we are talking about.

SENATOR MILLER: The fact remains they do have additional capacity, don't they?

MR. SCHULTZ: Well, by the very fact that we build these high capacity facilities, each tends to support the other, in a sense that they can carry more power.

It is just like, oh, -- it is like two inebriated gentlemen walking down the street. Going singly, they can't make it.

SENATOR MILLER: Be careful. There are some experts up here on this subject. (Laughter.)

MR. SCHULTZ: But the fact, walking down together, they can support each other -- we commonly use that as an illustration. (Laughter.)

We think it would improve the capacities of the existing facilities.

SENATOR MILLER: Now, I would like to get down to what I think might be some fundamentals. I hate to do it just before lunch, because it may dull the appetite of some, but is there a power shortage in California?

MR. SCHULTZ: So far as I know, there is not.

SENATOR MILLER: Is there a power shortage in Northern California?

MR. SCHULTZ: I am sure the agencies there are taking care of the power requirements.

SENATOR MILLER: Then, as far as you know, there is no power shortage in Northern California; is that right?

MR. SCHULTZ: I am quite sure there is no shortage.

SENATOR MILLER: Do you contemplate a power shortage in Northern California?

MR. SCHULTZ: Not a shortage -- you say in Northern California?

SENATOR MILLER: In Northern California.

MR. SCHULTZ: No, sir. I think the agencies there are planning to take care of the load growth.

SENATOR MILLER: Then, you contemplate a power shortage in Southern California -- excuse me -- is there a power shortage in Southern California?

MR. SCHULTZ: No, I am sure there is not.

SENATOR MILLER: Do you contemplate a power shortage in Southern California?

MR. SCHULTZ: Well, naturally, I don't speak for those utilities, but I am sure they are taking care of their future needs, all of them.

SENATOR MILLER: Well now, it seems to me you can make all these studies and put all these words on this paper, but if you don't have any shortage, present or future, it seems to me you have got to develop some other reasons to build the project.

MR. SCHULTZ: Well, Mr. Senator, in the future, there will be a shortage if you don't build facilities, and the question is: Do you build the facility as you normally do or take advantage of this intertie to meet that load growth?

SENATOR MILLER: All right. What you are suggesting, then, is that instead of doing what we would normally do, which I assume would be construction by privately owned public utilities, that you may do this for what purpose?

You would substitute this for their future needs for what purpose?

MR. SCHULTZ: It could be for two purposes. One would be to meet load growth, and thereby postpone the construction of steam-generating facilities; and, two, displace the energy

that would otherwise be produced in steam power plants.

You don't have to have a shortage as such, to justify the construction. Just by displacing fuel generation, you can justify the facility.

SENATOR MILLER: Well then, if I understand you, you just said the purpose of this would be to displace fuel generation; is that right?

MR. SCHULTZ: That will be one of the purposes.

SENATOR MILLER: What was the other?

MR. SCHULTZ: Provide for growth.

SENATOR MILLER: But I thought you suggested a few moments ago that there would be no shortage in the future.

Now, I am assuming we are going to continue to grow.

MR. SCHULTZ: Well, Senator --

SENATOR MILLER: And I think everyone else is assuming that.

MR. SCHULTZ: Well, I said that there being no shortage is assuming that they build facilities to meet the growth.

SENATOR MILLER: And you also stated that you assumed that they were building facilities to meet the growth. Is that right?

MR. SCHULTZ: Or, if this interconnection provided them with a more economical source of power with which to meet growth, they would postpone those particular facilities.

SENATOR MILLER: A more economical source of power. Then, really, what you are talking about is price, is that correct?

MR. SCHULTZ: Among other things, yes.

SENATOR MILLER: What are the other things?

MR. SCHULTZ: Reliability of service.

SENATOR MILLER: Steam is more reliable than anything I know of; wet year, dry year, it doesn't make any difference.

MR. SCHULTZ: No; I am talking, sir, about spinning reserves, getting the benefits of the diversities between the two areas.

At times, you have peak loads in the northwest that don't occur in California. During those particular periods, the power from the north can be made available to California, and vice versa.

SENATOR MILLER: What are we doing now to handle those contingencies in California?

MR. SCHULTZ: As far as the Northwest is concerned, we are going without.

SENATOR MILLER: But we are not in the northwest. We are assuming benefits to California. What are we doing now to take care of those emergencies you state might occur in the future? What are we doing now?

MR. SCHULTZ: Each agency presumably is providing its own reserve capacity to take care of these needs.

SENATOR MILLER: So, therefore, we don't need it, on the basis of any physical thinking, is that it?

MR. SCHULTZ: You don't need it, but you can save by eliminating it.

SENATOR MILLER: Well, you are talking about dollars again; is that right?

MR. SCHULTZ: Yes, on that basis, yes.

SENATOR MILLER: Now, are you talking about anything but dollars that we need?

MR. SCHULTZ: Well, I think I can translate practically everything to dollars, when we get right down to it.

SENATOR MILLER: Well, that is the point I am getting at. You talk about we can do these things and various ways of doing them, and we will end up saving some money.

Now, tell me, if there is no shortage that is stopping the growth of California at the present time, what are we going to do with this power in the future and why do we want to save this money?

What will be the direct benefit, the real benefit?

MR. SCHULTZ: Well, I am afraid I don't follow you, sir.

SENATOR MILLER: I am going around the bush. Let me go a little bit more directly.

In the Pacific Northwest, the Bonneville project, as I recall it, and I believe the Coulee Project, to almost the same extent, at least a similar extent, was predicated on the supply of tremendously cheap power, hydroelectric generated power, that would open up the northwest, and we know that some major industries who are high, firm power users moved to the northwest.

As a matter of fact, the Aluminum Company of America is just a few miles from Bonneville, is that correct?

MR. SCHULTZ: Well, it is in the Bonneville area.

SENATOR MILLER: Sixty miles, if that.

MR. SCHULTZ: Less than that from Bonneville Dam.

SENATOR MILLER: Yes, and the Bonneville Project, as I understand it, has a postage stamp rate. Is that likewise correct?

MR. SCHULTZ: That is correct.

SENATOR MILLER: No difference how far away you get; the same rate.

MR. SCHULTZ: Within the service area.

SENATOR MILLER: Which is rather a large area.

MR. SCHULTZ: That is right.

SENATOR MILLER: And that rate is about a mill delivered.

MR. SCHULTZ: It is two mills a kilowatt hour delivered.

SENATOR MILLER: On the actual power that is being assumed by the so-called industries in the northwest, what do they pay, one mill or two mills?

MR. SCHULTZ: Two mills a kilowatt hour.

SENATOR MILLER: For even this power that is interruptable?

MR. SCHULTZ: That is correct. Now, let me interrupt here. When I say two mills a kilowatt, this assumes delivery of power one hundred per cent of the time. There are other rates, but for these industries --

SENATOR MILLER: That is why I asked you the question, because for the principal amounts of power used by the principal industries, it is my understanding that they pay one mill on the basis it is interruptable, but it has only been interrupted once in the last six or seven years, for a comparatively short period of time.

MR. SCHULTZ: No. It is two mills a kilowatt hour.

SENATOR MILLER: All right. I have to take your word for it, because I don't know. I just thought they bought interruptable power and in fact, were using it on a substantially uninterrupted basis.

At any rate, it is two mills?

MR. SCHULTZ: That is right, sir.

SENATOR MILLER: Now, what are we going to do with that power down here at what -- three, four, five mills?

MR. SCHULTZ: Well, I used four mills as a value.

SENATOR MILLER: What are we going to do with it down here at double the cost, if they can't sell it to major power users at half the cost, or half the cost we will sell it for?

MR. SCHULTZ: That is because of the problems of

availability. The industries want this power delivered substantially 100 per cent of the time. Much of this power is available only 50 per cent that was coming to California.

SENATOR MILLER: Why don't they hitch up the coal mines at Cle Elum and make it available 100 per cent, if people would us it?

MR. SCHULTZ: They don't have the market for it yet.

SENATOR MILLER: Then I didn't ask the right question.

Let me try again. Why don't people go up to the northwest and buy power at two mills, if you assume they would use it down here for four mills?

MR. SCHULTZ: You are using it for different purposes down here, and you are using it here on the basis of its competitive value with other fuels. Up there, the competitive value is a different thing.

SENATOR MILLER: All right. I will drop that for a minute.

Do you have major industries using other fuels for energy in the northwest, rather than using hydro power or Bonneville power, regardless of how it is generated?

MR. SCHULTZ: I think very little, if anything.

SENATOR MILLER: I don't think any, as a matter of fact, is there?

MR. SCHULTZ: That is right.

SENATOR MILLER: What difference does it make if other fuels are available; the cost is still two mills.

How do we attract industries down here at double the price; say, a chemical plant like Alcoa? How do we attract them away from you folks up there?

MR. SCHULTZ: Well, that isn't the purpose of my study.

SENATOR MILLER: No, but that is the purpose of my question, sir.

You see, I happen to believe you can open up a new area if you have enough cheap power and water. I have seen it done.

MR. SCHULTZ: I don't think you are going to get the northwest interested in delivering power here so you can attract industries here, as against the northwest. I am not talking about attracting industry. You stated it before and I will be glad to confine myself to the particular benefits, particularly on the basis of economics; it is justified.

SENATOR MILLER: That you can save some money for all the people of California, is that right?

MR. SCHULTZ: California and the Northwest.

SENATOR MILLER: Except those that live in the P.G. & E. service area, because you disregarded that completely; is that right?

MR. SCHULTZ: Well, I have discounted them for our present purposes.

SENATOR MILLER: How about future purposes?

MR. SCHULTZ: It all depends on what we work out with Pacific Gas and Electric, or what can be worked out.

SENATOR MILLER: Don't those folks want to save money?

MR. SCHULTZ: Well, at the moment --

SENATOR MILLER: At the moment they don't? (Laughter.)

MR. SCHULTZ: Well, at the moment, they suggested we look to other markets, and that is what we have done. That doesn't mean that is final, by any means. It does prove it is feasible without that market. That is all I am saying.

SENATOR MILLER: I see. May I ask Mr. Brody a couple of questions?

CHAIRMAN TEALE: Surely; go ahead.

SENATOR MILLER: Ralph, one of the purposes of this project would be to supply pumping power for lifts over the hills between my frog pond and your clear water down at the other end of the line, between the Delta and Southern California?

MR. BRODY: It could be used for the purpose.

SENATOR MILLER: If it were, in fact, used for that, there wouldn't be much need for Oroville Dam, except for flood control purposes; is that correct?

MR. BRODY: Not necessarily, Senator, because the overall power requirements of the project for pumping will be greater than what Oroville will produce.

SENATOR MILLER: But if you had this power, you wouldn't have to produce any at Oroville, would you?

MR. BRODY: No -- I don't know whether that would satisfy all the requirements. Are you familiar with the figures on that?

SENATOR MILLER: In terms of kilowatt hours, it would, wouldn't it?

MR. SCHULTZ: We have assumed the Oroville Project in terms of our sale of power -- we have assumed the Oroville Project will be constructed as originally scheduled.

SENATOR MILLER: I don't know anything about kilowatts and all these terms you have in these pamphlets. Is there enough power to take care of the California Water Project Canal to Southern California?

CHAIRMAN TEALE: While we are consulting here, I would like to ask Mr. Hill and Mr. Coe -- I understand you two have a plane to catch this afternoon about 4:30; is that correct?

Will it be all right if we hear from you first after lunch at 2:00 sharp? Will that be all right with you gentlemen?

MR. BRODY: As I understand it, Senator Miller, the total amount of power which could be transmitted over this line, assuming that it was continuously available, would be about equal to what the pumping requirements would be.

That is, assuming none of this power which came down from the northwest would be furnished to others.

SENATOR MILLER: It is equal to the pumping requirements?

MR. BRODY: Just about equal to that.

SENATOR MILLER: And at four mills, what does that figure out in dollars?

MR. BRODY: With Mr. Fisher's calculations there, $58 million a year.

SENATOR MILLER: $58 million a year for pumping costs, right?

MR. BRODY: Yes.

SENATOR MILLER: Well then, if you had an equal amount of power, you could devote all this power to the pumping, which would take care of the deficiency of the project and also take care of any concern about building power facilities at Oroville Dam, is that correct?

MR. BRODY: For a time.

SENATOR MILLER: Why not forever?

MR. BRODY: Because, as Mr. Schultz pointed out, this power is not available for the large block, only for --

SENATOR MILLER: Sooner or later you would have to put old Cle Elum's coal to work?

MR. BRODY: Wholly apart from that, I say, the undependable energy from the northwest would be available for a period of only ten to twenty years.

SEANTOR MILLER: But Mr. Schultz suggested at the end of that time you are going to put the coal to work, because it is cheap.

What do we do at the end, if we don't do that? We have got this nice paid up line. What are we going to use it for?

MR. BRODY: Oh, you will use it.

SENATOR MILLER: Oh, we will use it, you can be sure of that, but do we need it?

MR. BRODY: Yes, you do, at the end of the period. It serves a lot of other purposes. Keep in mind we haven't taken into account surplus power that may be available after that from Canada and other sources. We aren't shutting you off in our study. We are just arbitrarily shutting off at ten years, just for the sake of being conservative, but goodness gracious, I see a long and useful life out of that facility.

SENATOR MILLER: Therefore, there would be power there generated one way or another, or brought from one way or another, in your opinion, used to supplant the generation facility of Oroville as far as the canal pumping requirements are concerned; is that right?

MR. SCHULTZ: Well, if Oroville were not built, it could be used for that purpose.

SENATOR MILLER: The point is, you don't have to build Oroville for power purposes, if you do this, or the line is of no value. You have to make up your mind one way or another. Is that unfair?

MR. BRODY: I do think it is unfair.

SENATOR MILLER: The gentleman says you will have the line, and I say, what the hell will you use it for?

MR. BRODY: If you don't sell it to the project -- the point is, Senator, when you take into account the power requirement and the gross loads in the State of California, you have to take into account not only the uses of private users, but it is taken into account in the growth loads

and the load requirements the pumping which is required for this project.

So whether you supply this power to the project or whether you supply it to somebody else, you are still going to have the same total amount of power.

SENATOR MILLER: This I understand. That is why I asked the first questions when I did ask them: There isn't any shortage in the foreseeable future for California; that the power requirements are believed to be taken care of and that therefore, you can continue to use this in place of the power generation facilities of Oroville Dam, even after the ten years by the gentleman's own statement.

We are going to use this power line to bring it from Canada or some place else.

MR. BRODY: But there will be some power available for that purpose.

MR. SCHULTZ: Mr. Senator, you are aware, are you not, that the load is expected to grow at a very rapid rate, so you can build Oroville. You can build steam power plants. You can do what you will. There will still be a demand for power from the lowest possible of sources.

SENATOR MILLER: I am well aware of that.

MR. SCHULTZ: All you would do by Oroville or other sources, would be to displace steam or atomic energy that would have to be built here.

SENATOR MILLER: I am also well aware of the fact if you do this thing, to all intents and purposes, that is the end of Oroville for other than a flood control dam.

I notice on this little chart the line stops at Bakersfield, and with all due respect to the folks in Bakersfield, where the people really are is Los Angeles and south.

MR. SCHULTZ: Well, I have stated we are thinking of extending it still further south into the Los Angeles area.

MR. BRODY: I can't agree --

SENATOR MILLER: I know you don't agree, but I don't --

MR. BRODY: The thing is, you are going to have a certain amount of power requirement and load growth in California. Now, if you don't build Oroville and don't build this line, you are going to have to get the same amount of power elsewhere. Not only does it mean Oroville is still going to have to be constructed, or some other equivalent is going to have to be constructed to meet these needs, but you are going to need the projects in California to meet the requirements of the State of California as a whole.

Now, the demands for project pumping is just a part of this entire picture, and if you build the project, if you build the Aqueduct and you need power for that pumping, you are going to have to get it someplace, and you can get it from Oroville and if you take it from Oroville, then you have all this power coming down from the northwest to use for the other load growth factors.

If you use this power coming down from the northwest for the project pumping, then you must get power from Oroville or elsewhere to meet the other load growth needs.

SENATOR MILLER: But, Ralph, take a look at what you just said. You said we have got to have more power from someplace to meet the need of the future. Isn't that what you said?

MR. BRODY: Yes.

SENATOR MILLER: This is true. The gentleman admitted that. First thing, we recognize that there is no great surplus of power in Northern or Southern California today and if you are going to have growth and new users, you are going

to have new power.

The point I am trying to make is: You can immediately eliminate Oroville as a power-producing feature for this canal system by bringing this in and hooking it up, and all you are talking about for Oroville then, is flood control or additional power for additional uses.

MR. BRODY: You can use this power for that purpose, and if you do not build power facilities for Oroville, then to supplant the needs which this otherwise would satisfy.

Then you are going to have to build some other project to do it. My only point is Oroville adds to the power supply needs of California.

SENATOR MILLER: No question about it. Will Oroville produce power at four mills?

MR. BRODY: I understand that --

SENATOR MILLER: So, there is a pretty good economic reason to use this power, rather than Oroville.

MR. SCHULTZ: Let me interject, if I may, sir.

Oroville power has value beyond just that of energy. It could supply what we call peaking capacity during peak loads. It can bring the power at times when the area needs it most.

SENATOR MILLER: I realize Oroville is a very valuable project, and I am among those who want to construct it for some power and also some water reasons.

I am just afraid it wouldn't be constructed.

CHAIRMAN TEALE: May I interrupt a moment?

Ralph, can you bring Mr. Schultz back this afternoon for a little while?

MR. BRODY: Certainly.

CHAIRMAN TEALE: I am certain there are still some questions we would like answered.

We are going to recess this meeting now until 2:00 p.m.

(Thereupon, at the hour of 12:40 p.m., the meeting was recessed until 2:00 p.m., same day and date.)

TUESDAY, AUGUST 23, 1960, 2:15 P.M.

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CHAIRMAN TEALE: Will the meeting please come to order?

Ladies and gentlemen, we have with us this afternoon two gentlemen from the State of Washington and the State of Oregon, who are here representing their Governors.

We will call first on Mr. Earl Coe, Director, Department of Conservation and Development, State of Washington.

Mr. Coe.

MR. EARL COE: Mr. Chairman, members of the Committee. I have a prepared statement. However, with the trend of your inquiries today, it is somewhat moot at the time.

I am here only today to advise you that we in Washington were interested in the question of preservation of our natural resources, the full utilization of them, and the question of surplus power came into that matter.

Joining hands with Governor Brown and Governor Hatfield, we decided to make an investigation to see whether there was a market for that type of a commodity, and so, rather than come here and argue with you or trying to tell you something, we are in a position of wondering whether there could be a meeting of minds, of a willing purchaser and a willing seller, but somehow or other, your questioning today makes me feel that I have come down here trying to shove something down your throats, and that isn't the question at all, and that is why I am not submitting my prepared statement, for that very reason.

I do hope that you feel that there is a position where Washington, Oregon and California can join hands to mutual advantage of all of us, and that was my only reason in being

here with you today.

I know that if we had this type of a hearing up in Washington, it would just be on the reverse vein of what you have here. We would feel, "What is California trying to do, steal our power from us; is that what they are going to try to do?"

That would be the whole attitude, and yet you have taught me today I am down here trying to sell you something and that isn't the case at all.

CHAIRMAN TEALE: Perhaps we might be in a position trying to steal it after a while, but we don't want to give the impression of going up with a gun right now.

MR. COE: If there are any questions I can answer in regard to our feeling in Washington, I will be glad to do that for you.

CHAIRMAN TEALE: I think you might amplify for us somewhat the position of the consumer in Oregon -- Oregon and Washington -- Washington, in your case.

What is your position going to be as a consumer of surplus power? How long will you have surplus power from your present sources and what are you going to look to for your future power needs; sources within your own state.

Give us an idea of how long surplus power might be available to us.

MR. COE: It hasn't come out in Mr. Schultz' report as yet, but actually, there will be a volume of surplus power for a very, very long time, because today most of our installation of dams have not the generator capacity to utilize what we call our summer flood waters.

They were set up on a maximum-minimum conditions, in which so many generators were put in to protect them and run for an average number of months a year, and actually,

there is a three-month period of a year where additional generators could be put in to almost every one of our dams, creating a power commodity which we think you could use and which, to us, the dams have been built and amortized, and it would make a really low-cost generation if there was a market developed for that type of power.

So, Bonneville, for instance, would have to probably increase their capacity seven or eight generators and each dam up the river the same way. Only John Day is equipped for the size.

So, the figures shown you today are the present surplus under the present generating capacity. However, if this market develops, additional generators could be put in, which would mean only perhaps for marketing of California, which would go beyond the minimum estimated here at ten or twenty years.

That is a great potential and it is something that should be fully explored, and that is the reason for our interest in carrying on this work in all of its various phases, because there are so many amplifications for it.

CHAIRMAN TEALE: This would be peaking power?

MR. COE: A peaking power, yes.

CHAIRMAN TEALE: During what periods of the year?

MR. COE: In the months of June, July and August; sometimes the fifteenth of May; that is our peak water flow in the Columbia River, and long records of time show a tremendous volume.

The present estimates are set up on a twenty-year basis and we have yet to meet that twenty-year minimum flow.

CHAIRMAN TEALE: When is your peak consumption?

MR. COE: How is that?

CHAIRMAN TEALE: When is your peak consumption?

MR. COE: Our peak comes in July.

CHAIRMAN TEALE: Your consumption, your use of power, your peak in use of power?

MR. COE: Oh, the peak of use is in late December and January. That is our peak use.

CHAIRMAN TEALE: What is the factor that controls that?

MR. COE: How is that?

CHAIRMAN TEALE: What is the factor which controls that; in other words, what is that usage?

MR. COE: Melting of glacier waters, freezing at the higher levels where the water comes from.

CHAIRMAN TEALE: No. I think you misunderstood my question. I asked when the peak consumption was. You said December and January.

MR. COE: Right.

CHAIRMAN TEALE: What is your use that causes that consumption?

MR. COE: Heating and lighting. Industrial load is fairly constant, but the hearing and lighting factor in the northwest at that time -- there is a tremendous volume of heating and electricity.

CHAIRMAN TEALE: Senator Cobey?

SENATOR COBEY: Mr. Coe, your interest in this, then, would be that -- you talk about a seller and a purchaser -- would you people be making a profit, so to speak, off of the sale of this power down here in California, or what is your thinking on that?

MR. COE: A profit would be made on the mere fact that today we are throwing it away.

Now, the price has to be agreed at, what a seller could buy at; see what price you could afford to pay for this. In reality, it is somewhat like the lumber industry, where

they threw away the sawdust and now this power we are talking about --

SENATOR COBEY: The interest of your area would be, you figure, that you would probably be able to get more for it than it costs you, in view of the fact that it is sort of in the nature of a byproduct at the present time in the existing facilities?

MR. COE: That is exactly what it is at the present time.

SENATOR COBEY: And, secondly, under the priority, the pull back and the recapture when your development reaches the point where you need this additional power, you will have it.

MR. COE: We had hopes we could go on and bring industry that could use this type of power and so forth, but we are manufacturing and could manufacture at a much greater rate than we have been able to use it, because we have to build the dams to protect our firm power needs for the natural growth of the area, and every time we build a firm power dam, we create additional surplus power.

SENATOR COBEY: Thank you.

CHAIRMAN TEALE: Are there any further questions of Mr. Coe?

SENATOR COBEY: This is basically a market, then, for your surplus power.

SENATOR FISHER: Mr. Coe, there was some indication by Mr. Schultz -- in fact, a statement by Mr. Schultz, that the $58 million figure which he said would be produced by the four-mill price, California, was arrived at by either no charge initially for power up there, or a plowing back of a substantial amount of the charge into the capital investment entailed in this intertie system.

Is it your feeling that the State of Washington or the agencies within Washington would be interested in plowing back a part, or substantial part, of whatever charge you made into amortizing these facilities out or not?

MR. COE: I think so. I think they would be very willing to do that. We have many public power systems built that are based on that fashion.

What we are thinking about here is not only Bonneville and the Federal power, but the full power development of the northwest, which is about on a sixty-forty basis at the present time.

SENATOR FISHER: I was going to ask you what proportion it was.

MR. COE: Sixty per cent Federal and forty per cent private and public utility.

SENATOR FISHER: So you feel both private and public utilities would be interested in this?

MR. COE: Yes, I do.

SENATOR FISHER: This highway for transmission?

MR. COE: In Washington, we have a Governor's Power Advisory Committee, which is composed of the representative of the public utilities district, a representative of the municipalities and a representative of private power people, and a citizens' representative, and they have endorsed the program of our full investigation of what this whole story is about, in cooperation with our two governments.

SENATOR FISHER: Are your estimates about the same as to the length of time that there would be a surplus power available for California, assuming none of these extra generators were installed?

MR. COE: Yes.

SENATOR FISHER: Between ten and twenty years?

MR. COE: Yes.

SENATOR FISHER: How much would -- assuming the installation of the generators for use only during the three summer months, what would be the increase in the amount of cost of power; do you have any idea?

MR. COE: I can't answer that, because of the changing price of machinery and so forth. I couldn't answer that technically. It should be investigated.

SENATOR FISHER: Well, obviously, I am asking for it off the cuff.

MR. COE: It would be a comparatively small cost, because the original cost is in the dam itself.

SENATOR FISHER: Are the private utilities up there selling for about two mills?

MR. COE: A problem that we would want to be interested in was that the sale of this power in California or to California interests would not be at a less rate than we sell the same amount of power to our own industries there.

In other words, it would be a handicap to our industries if we are selling to you power for, say, one mill, when our industries using the same type of power, surplus power, were paying two mills.

SENATOR FISHER: So you would look then to the device of plowing back a part of the revenue into this $58 million a year. Thank you.

CHAIRMAN TEALE: Are there any further questions?

I might introduce Senator Slattery, who has joined us, and I wish to thank you very much, Mr. Coe, for coming up.

I personally would -- I wouldn't publish it, but I would like to take a look at your prepared statement some day, if I might.

MR. COE: Thank you for listening to us today. When

we hold a meeting in Olympia, I would like to have some of you boys come up and see the reverse angle; what a job we have.

(The following is the prepared written statement submitted to the Commitee by Mr. Earl Coe, but not read into the record.)

STATEMENT OF EARL COE, DIRECTOR OF CONSERVATION, STATE OF WASHINGTON, BEFORE THE INTERIM POWER COMMITTEE, CALIFORNIA STATE SENATE, SACRAMENTO, AUGUST 23, 1960

Mr. Chairman:

My name is Earl Coe. I am director of the Department of Conservation and Development of the State of Washington. I serve as the representative of Governor Albert D. Rosellini on the Pacific Coast Governor's Power Committee.

In appearing before you today, I wish to express the appreciation of the State of Washington for this opportunity to discuss with you the question of a power intertie between the Northwest and California.

There are a great many questions involved in this matter including the economic advantages to the two regions to be gained by such an intertie. We have in the Northwest tremendous quantities of surplus, summertime power available at present and future hydroelectric projects. This great potential, available for about four months out of the year, now is being spilled over the dams because if it were generated there is no market for this dump power. The preliminary reports by the engineering consultants who have studied these problems, show that both regions could benefit by an interconnection of the power systems.

It seems to us from the first reports that the demand for power in California can fit into this picture to mutual advantage.

You can understand, I am sure, that we in the Northwest

wish that certain safeguards be set up, legally, for the protection of our power consumers, at such time as power demands in Washington and Oregon would require the return of energy to meet local requirements. We believe that this will require federal legislation but we feel that this can be worked out satisfactorily. All three governors, Governor Brown, Governor Mark Hatfield of Oregon and Governor Rosellini are agreed that safeguards are necessary on this point.

Our studies must be continued until full information on the intertie is at hand. Our investigations should cover:

1. The power intertie as a measure of conservation of natural resources and a factor in the California Water plan.

2. Its contribution to national defense and value in cases of natural disaster.

3. The multiple benefits resulting from inter-regional power coordination.

Already, we have accumulated a great deal of information on these and related subjects. In the State of Washington, we appreciate the leadership that Governor Brown has provided and the great contribution his special assistant, Mr. Ralph Brody, has made. We are pleased that an engineer from the State of Washington, Mr. Sol Schultz of H. Zinder & Co., Seattle, has been retained by California to make the studies of the intertie. Mr. Schultz is one of the most competent engineers in the nation in this field.

It is our hope that we can continue to work with you in the very harmonious fashion in which the discussions have been carried out to date. I believe that our three states, in taking a mature look at this subject, can reach agreements which will bring the intertie into being.

I will be glad to try to answer any questions you may have.

Thank you very much.

CHAIRMAN TEALE: Mr. Jonel Hill, Commissioner of Public Utilities, State of Oregon.

MR. JONEL HILL: Thank you, Mr. Chairman. Gentlemen.

There is one smile. There is one and a half -- two smiles. (Laughter.)

It is a great pleasure for me to be here, because I am not carrying the burden.

To watch the interrogation this morning was, to one who has so often been on the short side of the table, a distinct and relaxing time.

I, too, have a prepared statement that is moot. You may have it, if you wish. It contains a little bit of history, a hint of the possible benefits to the northwest, and contains a copy of proposed Federal legislation that would, we think, meet the objections that have been raised toward and sale of power to California.

I will submit it to the clerk as I leave. If you are interested, it will be available.

I want to make it clear to you that we, in Oregon, are just as skeptical about this program as you are. Governor Hatfield and I both have many reservations. We will make up our minds after all the facts are in.

Now, the place where we are today is that a proposal has been made. It has been partially explored, but not fully explored.

We don't think that we can intelligently judge the merits of this proposal today.

We would like very much to see this go forward, so that once and for all, the question of the validity of a power intertie between the two sections can be laid to rest, with either completion of the project, or a definitive answer that

lets us all come to a conclusion that is supportable.

Now, today, the questions you are asking were very searching and very good questions, and they should be asked. I merely raise this question: Should we ask them now -- because they go to the question of completing the project, not of studying the feasibility of the project.

I am not talking about your validity, only whether it should be done now before all the answers are in.

May I reiterate: Oregon today does not know whether we are for or against the proposal. We are in the same boat that you are.

If you have any questions, I would be pleased to try to answer them.

CHAIRMAN TEALE: I would ask this question: Are you in the process of a study to determine the feasibility or desirability of it at the present time?

MR. HILL: No, sir, we are not.

The question then is: Why are we not?

This proposal was originally raised by Governor Hatfield. We have not contributed financially to this study, although we wished to. Unfortunately, the appropriations bill became lost in our legislature in the closing days, both houses of the legislature being of the opposite faith than the Governor. (Laughter.)

SENATOR FISHER: It happens sometimes otherwise, too. (Laughter.)

CHAIRMAN TEALE: As Commissioner of the Public Utilities Commission, do you think such a study is desirable from the viewpoint of the State of Oregon?

MR. HILL: Absolutely. This has been booted about for so many years with studies of a limited nature being made, and constant talk about studying the whole problem. This is the

first time that the whole wide scope has been attacked.

I think that you are doing a wonderful thing, regardless of what the conclusion or eventual outcome may be.

CHAIRMAN TEALE: If you are advised in the State of Oregon on the scope of a study, would you, in your personal experience, consider that it would be wise to consider the problem from the overall effect upon the three states, or on each state separately?

MR. HILL: My advice was, and would still remain, a joint study to determine the effect on the economy of the entire area.

CHAIRMAN TEALE: Are there any further questions?

Senator Cobey?

SENATOR COBEY: Mr. Hill, I think on the presentation of Mr. Coe I have some understanding of the State of Washington's interest in this matter.

What about the State of Oregon? Are you all primarily interested in the possible consumer or producer end of this power, or what?

MR. HILL: Oregon's interest is quite different from Washington's. Most of Oregon is served by private utilities who are, as time goes on, receiving less and less Federal generation. I think Oregon is eighty-five per cent private and fifteen per cent public ownership served, and Washington is just the reverse.

Our interest is only, at this stage, in having a market for a presently unsaleable product. We think it would strengthen the financing program of the Bonneville marketing system, and would thus, in some small measure, redound to the benefit of all citizens in the state, even though they might not be in five years or ten receiving any power directly from Bonneville itself.

There will be a small benefit to us, yes.

SENATOR COBEY: Do I understand you correctly: Your power is eighty-five per cent privately generated?

MR. HILL: No. I am sorry, sir. We are served by eighty-five per cent private companies, but not that ratio is presently generated.

SENATOR COBEY: I see. What portion is it federally generated?

MR. HILL: At this stage, I think that probably seventy per cent would be a rough guess. Mr. Schultz might have a better figure than that.

SENATOR COBEY: I see. That would be federally generated, and so it is your thinking, if I understand you correctly, that if a water market -- wider water market was found for the federal power that people of Oregon, again speaking generally as current users or customers of the federally-generated power, might get a little better break on their power bills?

MR. HILL: Yes, sir.

SENATOR COBEY: I see.

CHAIRMAN TEALE: Well, will the State of Oregon continue to be a customer of an increasingly larger per cent of the federal generated power as time goes on?

MR. HILL: Inasmuch as we have such a small percentage of our agencies serving the consumer that are entitled to a federal preference, though those agencies may be using more power, the non-preference agencies will be getting less, so I think -- it goes both ways.

The net, eventually, will be -- that Oregon will be receiving less as time goes on.

CHAIRMAN TEALE: Let me ask one further question.

I see that this map shows a 500 kv line going entirely across the State of Oregon. If it were available, do you think

it would be of value, in wheeling facilities for power produced within your own state; one or the other, or have you thought of it in that term?

MR. HILL: Power produced by generation other than federal, you mean?

CHAIRMAN TEALE: Yes.

MR. HILL: There wouldn't be enough of that, I wouldn't think, to be a significant factor.

CHAIRMAN TEALE: Is your potential fairly well utilized now, or is it still --

MR. HILL: We are coming quite close to our ultimate hydro potential, yes.

CHAIRMAN TEALE: Are there any further questions?

Senator Fisher:

SENATOR FISHER: I don't suppose, Mr. Hill, we ever get any definitive answers in this process, but just arrive at one that is satisfactory at a time.

It occurs to me that since your area is served primarily by private distributors, that there may be some substantial objection in your area to a plowing back of the rate charge into amortization of this intertie system.

Do you think that would be the case, or not?

It is roughly the same question I asked of Mr. Coe.

MR. HILL: I think there is bound to be some objection to any proposal that is raised. I wouldn't want to speak for them. I might embarrass them. I really don't know what position they would take.

SENATOR FISHER: You would agree that from the testimony you have heard this morning that either -- only a token charge for the power, or a plowing back of the power charge into the capital investment is apparently necessary to make this thing work. You agree that that is what it looks like at the moment?

MR. HILL: Yes, sir.

SENATOR FISHER: Do you think that would be for the benefit or the ultimate benefit of the people of Oregon or not?

You indicated you felt they would get an ultimate benefit through the intertie, but taking that into consideration, do you think it would?

MR. HILL: Isolated as you have made it --

SENATOR FISHER: I said, taking that into consideration. I did not try to isolate it.

MR. HILL: It certainly is one of the things that would be considered.

May I again point out, and you have seized upon this point, that Oregon is in a little bit different position than Washington, because only fifteen per cent stand to make -- gain long-term benefits, the fifteen per cent who are presently entitled to remain on federal generation.

Certainly, it affects our answer, yes. I don't want to be cute or coy about it, but I don't want to commit them to a position they may not wish to stand on.

SENATOR FISHER: Then, as I understand it, the seventy-five per cent or the eighty per cent who are not entitled to the federal preference, in light of your reasonably full development upon water power, they will then have to look to oil or coal in Washington, or atomic power; is that correct?

MR. HILL: As time goes on, that is true.

SENATOR FISHER: How long do you estimate that development to be?

MR. HILL: In view of the last census, I don't think it is going to overwhelm us in the next few years.

SENATOR FISHER: Don't worry about the last one, worry about the next one.

CHAIRMAN TEALE: Thank you very much.

SENATOR COBEY: One more question. Mr. Hill, it would be possible, would it not, for your private utilities to convert themselves into public agencies and thereby have power preference?

MR. HILL: Well, I think that is in the nature of an unanswerable question. I think the assumptions on which it is based are such that I could not answer.

SENATOR COBEY: I just wondered. I don't know whether it is a practical possibility.

MR. HILL: I don't, either, sir.

CHAIRMAN TEALE: Thank you very much, Mr. Hill. We appreciate your coming here and hope that you gained as much as we have.

MR. HILL: It has been my privilege. Thank you very much.

SENATOR FISHER: I wonder if both Mr. Coe and Mr. Hill might be asked to submit their statements, since they did seem to want to, before our questioning, which I don't think is predeterminative as to what our eventual determination is going to be.

I think it might be helpful, unless they have objections.

CHAIRMAN TEALE: I am going to ask that they do so, if they would.

(The following is the prepared statement submitted to the Committee by Mr. Jonel C. Hill, but not read into the record.)

STATEMENT OF JONEL C. HILL, OREGON PUBLIC UTILITY COMMISSIONER
to
CALIFORNIA SENATE COMMITTEE
August 23, 1960

INTERTIE HISTORY

An intertie has existed between Oregon and California since 1918 when California Oregon Power Co. delivered energy to

Pacific Gas and Electric Company. Between 1918 and 1935, deliveries were to the California market primarily, but since 1935, primary deliveries were from California to California Oregon Power Co. These deliveries have been curtailed since California Oregon Power Company's production has been expanded to meet their own requirements and deliveries are now being made back and forth with Pacific Gas & Electric over 66,000 kv and 125,000 kv lines. These two circuits are capable of delivering 40,000 kilowatts to Pacific Gas and Electric Company. During the power shortage of 1953 and 1954, energy was delivered to the Pacific Northwest from California.

The Federal intertie between Oregon and California was apparently first conceived in 1945 upon inquiry of the Central Valley Irrigation District. In 1948 the Bureau of Reclamation included in its budget request intertie expenditures based on a report from data collected beginning in 1946. The matter then became dormant until 1953 when as a result of the Korean Conflict, the intertie was considered in connection with National Defense.

The Bonneville line to Yamsay, near Klamath Falls, Oregon, was originally constructed to provide COPCO energy to replace that delivered by COPCO to Hanna Nickel, a BPA industrial account, for the account of Bonneville. Because of a dispute regarding public or private ownership, the line was stopped at Yamsay. In 1953 COPCO hooked on to the line and extended it to Klamath Falls.

The present interest in an intertie stems from a gratuitous statement in a 1953 report on transmission facilities made to the Oregon Public Utility Commissioner by H. Zinder & Associates.

BENEFITS TO PACIFIC NORTHWEST

The Bonneville line to Yamsay is capable of delivering 250,000 kilowatts. In order for Bonneville to transmit energy to Pacific Gas & Electric, it is necessary to split the operations of COPCO. This would utilize from 95,000 to 110,000 kilowatts. Approximately 40,000 kilowatts can be delivered to Pacific Gas & Electric over the existing transmission lines of COPCO. This could make available on an interruptible basis approximately 350,000,000 kilowatt hours per year of secondary energy to California market without any additional investment, and would produce approximately $1,000,000 in revenue to BPA with COPCO receiving revenue or energy for wheeling the energy delivered.

The 40,000 kilowatt capacity can be increased to approximately 200,000 kilowatts by constructing 20 miles of line to Klamath Falls by COPCO, an investment roughly of one to one and one-half million dollars. With Pacific Gas & Electric installing additional transmission facilities totaling some two and one-half million dollars, the full capacity of the Bonneville line can be utilized. With 200,000 kilowatt capacity, Pacific Gas & Electric could utilize 1½ billion kilowatt hours which would produce revenue to Bonneville in excess of $2,000,000.

Benefits pursuant to the present Zinder study are properly discussed by others.

FEDERAL LEGISLATION

The Governors of the three states have repeatedly stated that corrective federal legislation to prevent the extension of the preference clause beyond the Bonneville marketing area was a condition precedent to an intertie. At the June hearing

before the Irrigation and Reclamation Subcommittee of the U. S. Senate Interior Committee, I proposed possible corrective legislation on behalf of Governor Hatfield. The theory was to delineate the Bonneville marketing area by statute. Subsequent to the hearing it developed that there was a substantial amount of objection to that approach.

I have since drafted another proposal which I expect to be agreeable to the Interior Department and to Senator Hall S. Lusk of Oregon, who has indicated that he would introduce the bill at the current session of congress. The bill would not attempt to directly amend either the marketing area or preference provisions. Substance of the bill is as follows:

> That any contract of the Secretary of the Interior for the sale of electric energy generated at federal plants in the states of Oregon, Washington, Idaho and that portion of Montana west of the Continental Divide (Hereinafter referred to as the Pacific Northwest), for use in the State of California shall contain a provision empowering and requiring the Secretary to discontinue any delivery of electric energy under such contracts, which in his judgment is necessary to fulfill contracts and applications for contracts for electric energy to be used in the Pacific Northwest.

CHAIRMAN TEALE: Mr. Brody, I think I will ask that you and Mr. Schultz come back for just a few minutes. I want to limit it, because we have a rather long agenda, and I am going to recognize first Senator Regan and then Senator Cobey.

SENATOR REGAN: Mr. Schultz, I want to preface my remarks by a situation that existed in the State of California,

and then I will ask you a question for the record.

For a number of years, we have been engaged in an attempt by various groups in the State of California to adopt the California Water Plan and to implement it by legislation which would start building what is known as the California Water Plan, or, at least, the first unit of it which has been designated as the Feather River Project.

I presume you are familiar with the project itself.

Now, Bulletin No. 3, as I recall, indicates that there are some 260 major dams and reservoirs which would be needed to be constructed in order to complete the so-called California Water Plan.

Now, in our attempts to reach an accord between the so-called northern interests and the southern interests -- or, I would rather say, the northern thinking and the southern thinking -- the question of a definition of feasibility of the various projects was attempted, and failed, because it was felt that many projects might be considered feasible for many economic reasons that couldn't be considered for strictly monetary reasons in the sale of the commodity, the water and the power.

But it was never satisfactorily solved, as far as an accord between the various groups who had different opinions on it.

Now, my question is this: That since there is, in effect, in the minds of some, a timetable whereby if you take water, for example, out of the Delta and transport it to the area south of the Tehachapis, that in the studies which have been made which have, in effect, said in Bulletin No. 3 that ultimately there must be restored to the Sacramento-San Joaquin areas of California waters which will be needed for their development, because all of the waters which arise in the

Sacramento Valley and which arise in the San Joaquin Valley, according to the studies made, were ultimately needed for their areas, so that if you take water out, you eventually have to build another project and put some back.

Now, since a determination in the future for which projects will eventually be built may be based upon a definition of feasibility, showing whether or not a project is, in fact, financially feasible, my question to you would be:

If you bring in the mill or two mills as far as the power is concerned, and if the sale of power from a project is essential in the timetable for the feasibility of any of the projects under the California Water Plan, would this not, in effect, be slowed down -- the construction of additional projects beyond the Feather River Project itself?

So, in effect, if you take away one of the factors which would make a project feasible by dumping this power into the state or brining it into the state, would you have slowed down the California Water Plan?

MR. SCHULTZ: From my preliminary findings, I have a strong feeling that instead of retarding these developements, or having an adverse effect on the feasibility, I think it would have the opposite effect.

SENATOR REGAN: Give your reason.

MR. SCHULTZ: For the reason that the facility now makes the market of the entire state available to these projects. At the present time, it is largely in northern California.

You have very heavy and growing demands in southern California, and if the power from these projects is saleable at the prevailing price here, it would seem to me that it would also be saleable in southern California at the prevailing price.

Now, the only effect, as I see it, of this development, would be to slow down the installation of steam generating

plants, and perhaps atomic energy plants, as well, and it would serve an additional purpose.

It doesn't, to my way of thinking, impinge on these hydro projects. It serves a simple purpose of displacing steam. In other words, saving fuel.

SENATOR REGAN: Let me ask you this question, because I don't know the facts upon you base your conclusion.

Let's assume that the intertie were a fact, and you did have the wheeling facilities. Could you wheel two million kilowatts into California and in no way affect the timetable of building the reservoirs which might be needed to generate power and provide water in the event you didn't wheel the two million kilowatts into California?

MR. SCHULTZ: Well, Mr. Senator, I think we have got to keep in mind that this two million kilowatts will be at a time when there is surplus power. There will be times when that surplus power will not exist, and you would have to build projects to meet those particular needs at a time when your needs in California -- at a time when the surplus power were not available.

SENATOR REGAN: Do I understand -- pardon me, I didn't mean to interrupt.

MR. SCHULTZ: Even during the next ten years. Mind you, we are talking about an average water year.

SENATOR REGAN: Well, what I get from your answer is, then, that whether or not you built the intertie and wheeled this power into California that it would make no difference because the ordinary progression of reservoir construction, which may have with it a power facility -- that, in no way, would be affected, because this power is a different kind, being intermittent or being non-peaking power, so that it would have ultimately, or immediately no effect.

MR. SCHULTZ: Yes. I hesitate, because I want to make sure that I answer you completely, and that it is a correct statement of fact.

The two million kilowatts that I spoke to you about, that could be delivered to California -- would be delivered during periods when water is available, and since it can't be guaranteed in California, naturally we would have to build --

SENATOR REGAN: Did you say "when water was available"? Wouldn't that be the same thing in California? Our reservoirs would also be -- I mean, the timetable of availability of California is no different than Washington or Oregon.

MR. SCHULTZ: You have much more steam and --

SENATOR REGAN: Except, you have more water, probably.

MR. SCHULTZ: In 1965, the figures show in Southern California you will be generating something like 48 billion kilowatt hours of energy by fuel; steam generation.

That is in addition to the hydroelectric projects. The hydroelectric projects, therefore, are not affected -- that is 48 billion kilowatt hours. We are talking about the delivery of ten billion kilowatt hours to California.

Now, in addition to that, our particular plan now contemplates delivering something like a million kilowatts of power to California, but mind you, it is Southern California.

So, on the basis of no tie, the present markets for the irrigation districts would not be affected. This peaking capacity I speak to you about, this million kilowatts that would be supported by the steam plant, and whatever other projects you would want to put it; this million kilowatts would go to Southern California, and from that standpoint, the northern markets would be unaffected. You would still put your projects in as you did before.

SENATOR REGAN: One more question now, because this is

important.

If you had the seven or eight years of background of the struggle we have had here, these things are important in our thinking.

Now, would the delivery of the intertie power to Southern California supply a sufficient amount to any particular area of California, so that it would be hesitant in voting funds for, say, the next hydroelectric project which might be necessary, or the next reservoir project which might be necessary mainly only to deliver water?

I mean, this is not only an economic struggle. It is a political one, also. So, in order to get the means by which to build, you have to have the legislative votes and you don't get them without having all the areas of the state get together on them.

So, my point is, if you provide any part of the state, north, central or south, with a facility or service, that then says for another ten years it is not necessary. Just using that figure, you, in effect, make them complacent, and that is the thinking I am trying to get in the record, and whether or not it would have any effect on -- and I am not picking on the south itself -- any part of the state.

MR. SCHULTZ: I wonder, Mr. Senator, if I might refer that question to somebody who is a better authority on that subject than I am. That is Mr. Brody.

SENATOR REGAN: I just want something in the record on that. I want to be able to point my finger.

MR. BRODY: In the absence of such an interconnection between northern and southern California, as I understand the situation, the power development which is required in the north would not, in any event, be transported to southern California.

On the other hand, if you have the existence of such a

line which could transport power to southern California, then you have a basis for increasing the market from which the northern California projects could dispose of their power and thereby make their projects more feasible.

SENATOR REGAN: Your conclusion would be rather than hinder, maybe it would facilitate the construction?

MR. BRODY: In my conclusion, yes.

SENATOR REGAN: Do you feel that is sound?

MR. BRODY: I feel that it is.

CHAIRMAN TEALE: Do you have a question?

SENATOR COBEY: This is purely factual. Why do you have a larger percentage lost when you are transmitting more power, than you do when you are transmitting less?

MR. SCHULTZ: The per cent loss is in direct proportion to the amount.

SENATOR COBEY: I see. All right.

Now, secondly, your last line of your prepared statement, where you talk about this five-year period, you are actually merely referring to the -- shall I say that in that sense, there is, according to you, a $50 million waste a year, and this intertie will cost $200 million; that in less than five years, why, in terms of that economic loss, it would be paid for. Is that right?

MR. SCHULTZ: If all of those benefits were assigned to the amortization of that investment, that is right.

SENATOR COBEY: Now, you are figuring on no interest charge, as I get it, on this at all?

MR. SCHULTZ: I am.

SENATOR COBEY: Are you figuring an interest charge?

MR. SCHULTZ: Yes. Fifty million dollars in five years will actually be $250 million.

SENATOR COBEY: And that makes the difference?

MR. SCHULTZ: That would, on the basis of my figures. I hope you will bear in mind, or bear with me, the fact that we have got to substantiate those figures. These are estimates and all we made were very general, and we certainly want to confirm them, but I think we are in the ballpark with what I stated to you, and on the basis I have stated.

SENATOR COBEY: Now, you may have answered this question when Senator Fisher was interrogating you.

The $200 million total cost you have estimated here includes not only the intertie or transmission line, but also the steam plant?

MR. SCHULTZ: No, it does not include the steam plant, but we include the annual cost for the steam plant and we don't amortize that in the figures I have used.

Bear in mind, too, if you please, that when I have worked up this particular plan, it doesn't have the endorsement of any one of the three states.

I have discussed it with the states.

SENATOR COBEY: It is merely illustrative?

MR. SCHULTZ: That is right.

SENATOR COBEY: You say you are going to have $29 million, you estimate, net revenue a year, and I haven't understood your division of that $29 million net.

How much of it is going to be used in the ten-year amortization of your line?

MR. SCHULTZ: I think -- would you mind if I asked Mr. Johnson with me?

MR. JOHNSON: The additional amortization required to amortize the line over a ten-year period instead of the thirty-five year life of the line, would be approximately $14 million a year.

SENATOR COBEY: And then the remainder of that, you

said -- in other words, $15 million of the $29 million annual net you said would be divided, as I got it, between the areas, but you never indicated how -- I mean, what.

MR. SCHULTZ: We are not going to, if you don't mind, sir.

SENATOR COBEY: Okay; fine.

MR. SCHULTZ: I will say this, though. In my general statement, we have -- or, in the statement I presented before the Senate Subcommittee, I didn't assign even the full $15 million. I assigned approximately $12 million, because I figured there may be some of the connections at the terminals and elsewhere we needed and we needed a little gravy in the thing, so I am only allowing $12 million.

SENATOR COBEY: Now, the two basic differences between your proposal and the proposal of the Bonneville Administration in this federal report that we have, are essentially these, are they not?

First, you are proposing a larger and a longer line in order to reach a larger market; and, secondly, through the use of the steam plant, this coal, you are proposing a minimum firm power setup, whereas theirs is entirely dump.

MR. SCHULTZ: That is correct, and may I say in connection with that steam plant, that that is on the assumption it can be shown to be more feasible than any other source of fuel power in California.

In other words, if it can't be proved that way, you wouldn't build a steam plant up in the northwest. You will build it in California.

Our rough figures show that it can be.

SENATOR COBEY: But, basically, in order to make this intertie saleable, so to speak, down here, you want to guarantee us at least a minimum amount that we are sure of.

MR. SCHULTZ: Yes, because the line goes on after it is paid off, and you should have the benefit of that million kilowatts, and if the line is paid off, it becomes a very worthwhile project.

So the benefits go on after it is paid off in substantial amounts.

SENATOR COBEY: Now, perhaps I misunderstood one of Mr. Brody's answers to Senator Christensen, but is the longer and larger intertie going to result in lower unit cost of repayment, or is it merely that it is a more feasible project, in your estimation, because of the larger market involved?

MR. SCHULTZ: I am sorry.

SENATOR COBEY: Is the longer and larger line going to result in a lower unit cost of repayment, or is it merely that it is more feasible, because there is a larger market?

MR. SCHULTZ: I don't --

MR. BRODY: I don't recall referring to that particular element, Senator. What I was saying was that during the payout period of the line, whatever it is, that if you pay off the line, then the cost, in essence -- I was saying the cost of the power you bring down later is less by virtue of the fact you are not paying transmission costs.

That was the point I was trying to get to.

SENATOR COBEY: I thought you were drawing a difference there, Mr. Brody, between the short line, so to speak, just in Northern California and the longer line down the state.

MR. BRODY: I don't recall that, Senator.

SENATOR COBEY: I see. All right. I have no further questions.

CHAIRMAN TEALE: Are there any more questions?

Thank you very much, Mr. Schultz. Maybe we will have the pleasure of having you back.

MR. SCHULTZ: Thank you, sir.

CHAIRMAN TEALE: Our next witness is Mr. Robert Gerdes, Vice President, Pacific Gas and Electric Company.

Mr. Gerdes, you may proceed.

MR. ROBERT GERDES: Mr. Chairman, my name is Robert H. Gerdes. I am Executive Vice President of the Pacific Gas and Electric Company.

At the table with me is Mr. John Bonner, who is Vice President and Engineer for the company, who will assist me on any matters that are too technical for me to handle.

I have a prepared statement which I believe the members of the Committee have, and I believe in the interests of time, that I will read this statement, if that is the will of the Committee.

CHAIRMAN TEALE: Fine.

MR. GERDES: Early last year Bonneville Power Administration, which has incurred annual deficits in power revenues, requested Pacific Gas and Electric Company to consider the feasibility of purchasing surplus dump energy from the Northwest.

Almost two billion kilowatt hours a year would be delivered by Bonneville to the California-Oregon Power Company at existing interconnections and transmitted over COPCO lines for delivery to PG&E at the Oregon-California border. BPA net revenues under this plan would be increased by approximately $1,800,000 a year.

And in that connection, we used a figure of 2.1 mills per kilowatt hour which would be paid to the Bonneville Power Administration for power that would be purchased at 95 per cent load factor.

In our discussions with Bonneville, we found no indication on their part that we could have that power for

nothing or that we should use it at a value of zero. Our plan was to purchase this power at the standard Bonneville rate and I believe that it is our judgment that anyone purchasing that power would have to purchase the power at the Bonneville rate.

SENATOR COBEY: That is two mills?

MR. GERDES: Well, it is 2.1 mills per kilowatt hour, if you purchase it at 95 per cent load factor, which means purchasing it on almost a continuous basis. If you purchase it at a lower load factor, the price goes up.

An exhaustive study of many proposed interconnections between the Northwest and California, completed by Bonneville and other agencies last February, shows that this is the only financially feasible plan for disposing of Bonneville dump energy in California.

We estimate that PG&E could take up to two billion kilowatt hours of this dump energy a year consistent with other obligations. This conclusion gave careful consideration to the fact that we are compelled to make contracts for minimum purchases of oil and gas in order to assure availability of these fuels when needed. We must use such fuels to the extent of our contractual commitments before we can back off steam generation to accommodate hydroelectric generation.

We believe our first duy is to make a market for all firm and dump energy generated by the Company and others in California before we import power from outside the State.

We intend to continue to make a market for surplus Central Valley Project power before we take Bonneville power. The Company has provided the only market for CVP dump energy. No preference agency or public facility has purchased or asked for any of this type of power from CVP. Were it not for the contract between CVP and the Company, the CVP would find itself in much the same position as BPA of having large blocks

of such energy going to waste each year.

And I think it is important for the members of the Committee to have in mind that the Central Valley Project itself does produce very large amounts of this surplus type of power which has been talked about so much today and no one else in the State has indicated any desire whatever to use it; and, of course, the reason for that is that surplus power has no value because it is only there at certain times and it is not at others and in order to meet load demands it is necessary to have steam plants available to crry the load when the power is not there, so the only value of that type of power is what you can save in fuel burned in a steam plant.

We also buy a considerable quantity of firm power from various irrigation districts and public agencies which have their own generating plants in connection with water conservation works. The Northern California market for firm peaking power is already satisfied by the output of local hydro projects. Careful scheduling of future development will be required to prevent oversaturation of this market, with resulting reduction of power value.

It is our belief that the importation from the Northwest of firm power, or more than two billion kilowatt hours of dump energy, would seriously jeopardize water conservation in California by federal and state, and local,public and private agencies and could have an adverse effect on California oil and gas industries.

The studies on which the BPA proposal was based showed that the most economic plan for the transfer of Bonneville dump energy would provide for use of the existing COPCO-PG&E transmission systems and the construction of a new 230,000 volt transmission line from Klamath Falls on the COPCO system to the Pit 3 Powerhouse, a distance of 97 miles.

And, Mr. Chairman, and members of the Committee, I believe that there is before you a map which shows the transmission systems in the southern part of Oregon and the northern part of California and shown in red is the proposed line, 230,000 volt line, tie line, that would be built to take the power from Bonneville that we have spoken of. The line,you will note, is a relatively short line and ties into our system at Pit 3, where we have transmission lines which are now used to take into the San Francisco Bay area the power from our Pit River system.

We would propose to convert the operation of our Pit River plants from a peaking operation to a 24-hour-a-day steady operation, which would make room on those lines to transmit approximately 200,000 kilowatts of power that we would be able to get from the California-Oregon Power Company -- get through the system of the California-Oregon Power Company, which power would come from the Bonneville Power Administration and the only cost thereafter of transmitting this power would be the cost of some 97 miles of line, plus the cost of the power itself, which was approximately 2.1 mills a kilowatt hour, which would give us a cost at load center of approximately three mills a kilowatt hour.

We estimate that the average cost to us of such energy, after transmission losses, would be 3 mills per kilowatt hour at load center.

Any consideration of a higher value to that power is unrealistic. Reference was made to the fact that the power would have a value of four mills per kilowatt hour. That is not in accord with our own concerns and the concerns of other producers in this state.

Reference was made that the four mills would be based upon oil at $2.40 a barrel. Oil today is purchasable by us

at approximately $2.10 a barrel or less, and we generate large amounts of power from gas at a somewhat lower cost.

On this basis, we determined that the plan would be economically feasible if the dump energy were delivered to us at times when it could be used to reduce generation in some of our older and less efficient steam plants. This dump energy from the Northwest, like the dump energy we now purchase from the Central Valley Project, is useful primarily in our area as a replacement for energy which otherwise would be generated in steam plants.

A draft of a contract with BPA was prepared and submitted on April 9, 1959 to the Committee on Interior and Insular Affairs of the United States Senate. At the hearing some members of the Committee suggested that provisions of the proposed contract relating to termination of energy deliveries be clarified to show that the Bonneville Administrator could withdraw energy from PG&E for sale to other purchasers, public or private, at any time he desired. Consequently, on April 15, 1959, the Company in a letter to the Chairman of the Committee stated that it would agree to a provision allowing either party to terminate the contract on 30 days' written notice given to the other.

Contract negotiations to put the plan into effect were suspended at the request of the Committee until a study of the feasibility of higher voltage interconnections was completed by BPA, in cooperation with the Bureau of Reclamation, the Federal Power Commission, the Governors of the affected states, and local public and private agencies. This study was submitted to the Committee in February of this year, and I understand this Committee has a copy of that report.

The study showed that none of these interconnection schemes was financially feasible, and that the originally

proposed intertie plan would:

(1) provide substantial benefits at the earliest possible date at lowest cost;

(2) make maximum use of existing high voltage transmission facilities;

(3) require minimum new facilities over the 97-mile gap between the 230,000 volt transmission systems of the Northwest and California;

(4) provide capacity sufficient to transmit almost two billion kilowatt hours per year of Northwest suprlus dump energy into California;

(5) make available an additional 160,000 kilowatts of capacity to the Northwest for emergency use;

(6) make possible the sale of dump energy not needed in the Northwest and which, in fact, otherwise would not even be generated;

(7) provide an average net revenue to BPA of more than $1.8 million a year; and

(8) be the only plan financially sound under current conditions.

Upon the request of the State of California at a hearing before the Committee in May 1960, contract negotiations were further suspended to allow additional time for Sol E. Schultz, the State's consultant, to prepare and present general conclusions based on an independent study of possible interconnections. This consequently has deferred the date when BPA could convert waste energy into needed revenue.

At a third hearing in June, Mr. Schultz, in presenting a summary of the findings and conclusions of his work to date, stated:

"In connection with our study of the proposed 500,000-volt transmission facilities, we have assumed

"that the proposed BPA-PG&E 230,000-volt connection would also be in operation. We found that approximately 7 per cent of the total power transmitted over the combined facilities would flow over the 230,000-volt connection.

"Since these combined facilities would, at times, be loaded to their maximum capacity, it is concluded that this lower capacity facility increases the amount of power to be delivered by about 7 per cent.

"It would also serve other useful purposes by reducing losses and improving the reliability and stability of operations. Therefore, we do not believe that the 230,000-volt line would adversely affect the feasibility of the higher capacity facilities provided that it is given no priorities over these higher capacity facilities."

Mr. Schultz has proposed two 500-kv circuits running from the Columbia River in the Northwest southward to Bakersfield to be completed in 1964. Along with the power output of a steam plant which Mr. Schultz proposes to be constructed in the State of Washington, he estimates that initially there would be one million kilowatts of firm power made available in northern and central California. According to his statement, this firm power would be available 14 hours per day during week days, or 70 hours per week at a capacity factor of 41.7%.

This low capacity factor firm power would have the same general characteristics as the byproduct hydro power which is proposed as a part of many water conservation projects which are under construction ir in advanced stages of planning by local irrigation districts, county water agencies, and other local entities in California.

As you know, this Company has provided a market for power generated by the Oakdale, South San Joaquin and Merced irrigation districts and other public agencies. We recently have signed a contract with the Oroville-Wyandotte Irrigation District to purchase the entire output of the District's proposed South Fork Feather River Project. By providing a market for the power output of the plants of these districts, our Company has aided materially the financing of their projects and has enabled them to develop additional supplies of water for irrigation and domestic purposes.

A forecast of future hydroelectric development in northern and central California was made in connection with load and resources studies for the BPA in 1959 by a special committee of representatives from the Federal Power Commission, Bureau of Reclamation, California Department of Water Resources and Public Utilities Commission and the public and private electric utilities in California. This committee estimated additions of 4 million kilowatts of hydroelectric resources in northern and central California before 1985 with 2,200,000 kilowatts of this amount prior to 1970. Economic factors require that these hydroelectric additions be designed for peaking operations at about the same capacity factor as the firm power which would be imported under Mr. Schultz' proposal.

Absorption of this large quantity of peaking capacity from local water projects -- and there are some thirteen or fourteen of these proposed projects that are now pending and which I could read a list to this Committee if it desires. I understand, however, that many of these districts are going to appear as witnesses here and it may not be desirable.

Absorption of this large quantity of peaking capacity from local water projects will require careful scheduling in order to give maximum value to the power produced. Since the

annual load factor of the northern California load is about 63%, low capacity factor hydro must be complemented by construction of high capacity factor thermal plants as resources are added to meet load growth. In our opinion, the power from local water and power development projects should be given priority in the California market. The Company has planned, and will continue to plan, its construction program so as to create a market for such local peaking power as rapidly as load growth will permit. Our studies show that after the large amounts of such power noted above are assinged to the load, additional imported power of similar characteristics has very little value. Of course, that refers to our area.

The importation of Northwest firm power would also seriously interfere with the marketing of power from the State's Feather River Project, particularly in view of the necessity of providing a market for power produced by the proposed pump storage in the State Water Plan. It is difficult to see how the importation of firm power proposed by Mr. Schultz would serve the pumping requirements of the California water plan. This low capacity factor power in a dry year in the Northwest would not be sufficient fully to meet the State's pumping loads.

And you will recall that Mr. Schultz stated several times here and I quoted him or wrote down his statement, to the effect that there will be times when the power from the Northwest would not be available and, of course, if the power is not available, it is not very useful in pumping water at crucial times in connection with the State Water Plan.

For more than ten years we have cooperated fully with State engineers in the development of their plans for the power generation and project pumping power supply phases of the Feather River Project. On May 11, 1960, in a letter to

Mr. Ralph M. Brody, Special Counsel to the Governor of the State of California, we said we were willing to sell and deliver off-peak energy to the State for project pumping purposes on its proposed Feather River Project in an amount equivalent to the amount purchased in any year from BPA under the proposed contract. The charge for such energy would be no more than the price the Company pays Bonneville, plus the Company's incremental out-of-pocket cost of transmitting the energy. We would make no charge for use of the Company's existing transmission network south of the Pit 3 Powerhouse, except to cover the cost of additional facilities required to connect our transmission system with the pumps.

In other words, the full benefit of all the power that we would bring into California from Bonneville would be made available to the State Water Plan at our actual out-of-pocket cost.

Company studies show that the amount of energy that can reasonably be brought in and sold in the northern California market would be a maximum of two billion kilowatt hours annually. Any additional energy, whether firm or secondary, such as might be brought into California by the proposed high voltage line now under consideration by Mr. Schultz would, in our opinion, be detrimental to the interests of northern and central California in several very important respects:

(1) Bonneville energy will be dumped in the northern California market during the summer months -- now, this statement was prepared at a time when it was our understanding that he proposed to market this power in northern California. That has been somewhat modified by his testimony today that he plans to sell it all in southern California. I will read that statement again, but this statement was prepared in the light of what we understood to be the proposal Bonneville

energy will be dumped in the northern California market during the summer months when the Central Valley Project and other water developments are releasing large amounts of water for irrigation and generating byproduct energy. The Central Valley Project has no other market for this energy except that provided by the Company. We have purchased all the dump energy produced by the Central Valley Project since it first began operation in 1944. The Company, through its ability to back off steam generation, is the only agency that can use this energy. We believe that the importation of more than two billion kilowatt hours of dump energy a year from the Northwest might adversely affect this market for Central Valley Project energy and could deprive the project of revenues needed to help subsidize water development in California.

(2) The Company's system could not absorb more than approximately two billion kilowatt hours a year from the Northwest without seriously interfering with our purchase of steam plant fuel. If we were to buy additional power from the Northwest and further reduce steam generation, we could not use fuel oil which now is produced as part of oil refinery operations. Substantial minimum fuel oil commitments must be made in all years in order to assure a firm supply of oil in dry years. If the present market for fuel oil were destroyed, the oil companies would no doubt change their processes to eliminate fuel oil production. In adverse water years when steam generation was required, there would b no fuel to operate the plants.

(3) The importation of more than two billion kilowatt hours a year from the northwest into California would not be feasible in view of PG&E's obligations to import natural gas from the southwest and from Canada. In order to make the importation of such gas financially feasible, we must take

or pay for minimum amounts of gas each year. The use of natural gas in steam electric plants on an interruptible basis has made it possible to take out-of-state gas at the high capacity factors needed to make such long distance transmission economic. For example, minimum annual delivery of El Paso gas is 91% of the contract quantity, and on the proposed Alberta supply, minimum annual delivery will be 90% of contract quantities. Deliveries of Bonneville energy in excess of two billion kilowatt hours per year would compel cutbacks below these gas contract minimums and would require the Company to pay for gas it was obligated to purchase but did not use, which it could not and would not do.

It always has been the Company's policy to construct its own interconnecting lines with out-of-state sources whenever this has become economically feasible.

PG&E has the responsibility for providing adequate and economic power supplies for the service area of northern and central California. In carrying out this obligation, the Company in the past has provided interconnections with other power systems to the north, east and south of its service area as well as within the area.

At the present time, the Company has (a) two interconnections, one at 66,000 volts and the other at 125,000 volts with the system of The California-Oregon Power Company, (b) two interconnections at 110,000 volts and one at 60,000 volts with the system of Sierra Pacific Power Company, which operates in eastern California and western Nevada, and (c) a 230,000 volt interconnection with the system of Southern California Edison Company.

We have built these interconnections as and when it has become necessary and economic to do so. In the present circumstances, we now are willing to build the additional

interconnection with The California-Oregon Power Company which can be accomplished at minimum cost by reason of the ability to use, for the most part, existing facilities. We are prepared to provide additional interconnections with Oregon, Nevada and Southern California, whenever conditions justify such construction.

And I may say that we would be prepared to construct such facilities to aid in the delivery of additional power to southern California if there is any surplus developing in this area over and above the need in the area. As Mr. Schultz -- and, of course, that construction would be in cooperation with the Southern California Edison Company and at no cost to the taxpayer and would provide taxpaying facilities.

As Mr. Schultz pointed out to the Senate Committee in Washington on June 15, 1960, the intertie proposed by Bonneville for sale of dump energy to PG&E could go into service much earlier than the interconnections now being studied by Mr. Schultz and "during that period of time there would be benefits that would otherwise be wasted." Moreover, since the contract we propose could be cancelled at any time, it would not prevent the construction of any other lines found feasible in the future. In the meantime, the government would gain $1,800,000 a year in net revenues from Bonneville energy now going to waste.

Since Mr. Schultz has not completed his studies of other interconnections, we cannot comment further on the economic feasibility of his proposed plan.

However, for the reasons we have stated above, it does not now appear that Pacific Gas and Electric Company could be a party to any arrangement under which we would take any part of the large amounts of power which would be brought in from the Northwest over the common carrier lines he has proposed.

I might add this: You are all familiar with the difficulties that have been created by a great forest fire in the Donner area. So far as the supply of power to Nevada is concerned, as the statement mentioned, we have three transmission lines that go over the summit. A fire started on -- not on our part of the lines, but on the part of the lines owned by Sierra Pacific Power Company.

The result of that fire was that all of those lines came down, and Nevada, which had relied for practically eighty to ninety per cent of its power from our supply for a very considerable period of time was without power.

Now, if we were purchasing a million kilowatts of power today over Mr. Schultz' line and the similar forest fire were to take place somewhere between Red Bluff and Dows, Oregon, Northern California would be today having a brown-up, and that is one of the reasons why we make the statement that we could not be a party to the purchase of any such quantities of power as this, coupled with the fact, of course, that it has been made perfectly plain, both by Mr. Schultz and by the representatives of the Northwest, that that power would be available to us in California if we were to be a purchaser only so long as the Northwest doesn't want it, and if there was any circumstance that developed, such as an unusually dry year or their load growth should be faster than they had figured out, some two or three years ahead, when they have to make these guesses on load growth, and if we were relying on that source -- that type or source of power to serve our customers, we could be brought into the position where we would be unable to provide our customers with service.

For that reason, we cannot see how we could be a purchaser -- that and other reasons -- how we could be a purchaser of such quantities of power.

Of course, one of the other factors that I mentioned, and a very important one, is it would delay the economic development of Northern California by delaying all of these water -- local water projects, by our delaying the construction of steam plants.

We would be stopping the development of Northern California in favor of development in the northwest.

So far as this power or the use of this power for the State Water Plan, in the light of the statements that have been made here with regard to this power, that it is here only as long as -- and to be available only so long as it isn't needed elsewhere, and that there will be periods of time when no power will be available, it is very difficult to see how that could be a source of supply of power for the state pumps.

If you want that type of power, there is lots of it there in the Central Valley Project today that we are purchasing, and which the state, of course, would have a preferential right to take.

The answer is that neither the state nor anyone else can use it, because they don't have the means to utilize it. The only reason we can use it is because we have large steam plants that we can shut down and we gain the value of saving fuel, which represents the value of this power.

Of course, this power, if it is said to be available for ten or fifteen years, one matter that you have to consider is: What would happen with regard to inflation?

If you delay the construction of generating facilities in California for ten or fifteen years, and then you have to put them in, why, you may find that the cost is fifty per cent or 100 per cent more to construct those capital facilities.

Although I don't have an authorization of our directors

to make the offer, but I dare say that the Pacific Gas and Electric Company would be very happy to reverse that situation and say, "We will build large and economic plants today and at today's prices and then sell the power to somebody else, if they will buy it, so long as we don't need it, and then we will have the advantage of freezing our capital investment at today's prices."

Then, when the power is taken away, the purchaser then would have to go out and try to replace that power, and I think he would find it no doubt very likely -- I would say, based upon the past ten, fifteen years of experience, the purchaser would find he would have to pay very substantially more for it, so certainly, the PG&E would like to have the situation reversed and be in a position where we could construct the facilities, and enjoy the economic development that will go with it, and then sell any surplus we have to somebody else, with the understanding we can take it away any time we wish.

I think I have pretty well covered the points I had in mind. I will be glad to answer any questions.

CHAIRMAN TEALE: Fine, Mr. Gerdes.

I would like to introduce Senator O'Sullivan, who just came in.

I would like to ask one question. I don't think it is going to be argumentative.

Throughout the two testimonies here, we have heard Mr. Schultz referring to a two million kilowatt capacity, and you have been talking about a two million kilowatt hours per year.

What is the relationship there?

MR. GERDES: Well, I think I could answer it, but I am going to ask Mr. Bonner, who is an engineer. He will give you

a better answer, I am sure.

MR. BONNER: The million kilowatts refers to capacity. In other words, the instantaneous number of kilowatts available, whereas Mr. Gerdes was referring to two million kilowatt hours per year, which would be kilowatts times hours, and that is energy.

CHAIRMAN TEALE: Now, if you have a two million kilowatt capacity, what will that give you in capacity a year?

MR. BONNER: I would depend on the time that you had power to transmit. If you had it for one hundred per cent of the time, you would have 8,760 hours times two million kilowatts.

Now, Mr. Schultz mentioned an initial capacity of one million kilowatts and also mentioned a figure of approximately ten billion kilowatt hours. So, he is bringing in power on a ratio of about ten to eighty, because it is 8,760 hours times a million, as against ten billion.

CHAIRMAN TEALE: Do that again.

MR. GERDES: That is why I ducked this question.

CHAIRMAN TEALE: All I want to know is: If you had two billion kilowatt hours a year and you had -- would it be fifteen per cent, twenty, thirty, or --

MR. BONNER: You mentioned two million kilowatt capacity.

CHAIRMAN TEALE: Let's use one that is simpler.

MR. BONNER: Of course, you get into trouble with decimal points when you are doing billions in your head. But, one million kilowatts, if you had it throughout the year, would be 8,760 hours times that.

So, that is 8,760,000,000 kilowatt hours.

CHAIRMAN TEALE: That is the one hundred per cent factor?

MR. BONNER: The one hundred per cent factor.

However, if you brought it in half the time, you would bring in 4,390,000,000 kilowatt hours, you see.

CHAIRMAN TEALE: All right.

Now, on your 230 kilovolt line we are talking about, what load factor do you use to arrive at two billion per year?

MR. BONNER: Now, this will really get complicated, because that is based on the availability of this dump power, and it is not available all the time.

There are many months when the northwest doesn't have it, so in arriving at the two million kilowatt hours that we would bring in, it was based on the availability and also our ability to take the power at certain times.

But, to simplify it, the capacity of the line was approximately 200,000 kilowatts, to compare to this two million kilowatts that Mr. Schultz speaks of, and we would bring in this two million kilowatt hours on the average -- two billion, I beg your pardon -- as compared to the ten billion that Mr. Schultz mentioned, would be brought in initially on the larger line.

So we would bring in on that ratio on the average of about twenty per cent of the energy, but our line would not have the twenty per cent of the capacity.

It would be a lower percentage.

CHAIRMAN TEALE: Senator Regan, do you have a question?

MR. GERDES: If I may say this, the problem is that the runoff in the northwest is very much the same as it is in California. The runoff is heavy when the snow is melting in May, June, July and August, and that is the same time, as you know, that our California streams are running full, when the Central Valley Project has large amounts of power available, and so the one is in competition with the other, and then

after the runoff is over, that power is gone.

SENATOR REGAN: On page 9 of your paper, Mr. Gerdes, you mentioned a letter to Mr. Ralph Brody, where you state you are willing to sell and deliver off-peak energy to the state for the project pumping purposes on its proposed Feather River Project in an amount equivalent to the amount purchased in any year from BPA under the proposed contract.

Then, you said, the charge of such energy would be no more than the price the company pays Bonneville, plus the Company's incremental out-of-pocket cost of transmitting energy.

You said you would make no charge for use of the Company's existing transmission network south of the Pit 3 Powerhouse, except to cover the cost of additional facilities required to connect our transmission system with the pumps.

My question is: Translated, this means how much?

MR. GERDES: I will ask Mr. Bonner to state that. He can translate it.

MR. BONNER: Senator Regan, that would be the load center that would cost us to bring this power in. Now, as Mr. Gerdes stated here, we have been working with the State since before 1951 and have offered, in effect, the same thing from our steam plants at the same price, and we are saying this power we would bring in would cost us about that, anyway, so we are offering this power, but I also want to mention that we have offered this off-peak steam energy, which is about the same price.

Now, to get it to the pumps, we would use existing transmission systems, but there will be cases where we might have to build some substations into the pumps and we would have a small charge in addition.

I would estimate, depending on where the pump is

located, that price would vary from load center south, from three to four cents in round figures.

SENATOR REGAN: That is all from within the PG&E service area, which goes from where to where?

MR. BONNER: The PG&E extends from Eureka generally south to the Tehachapis.

MR. GERDES: May I supplement that? We, as well as the Southern California Edison Company, the Bureau of Power and Light of the City of Los Angeles, have had discussions with the state, so that we set the groundwork for working out an exchange of power, so that the delivery of power would not be limited to the end of our system, but we could -- we have got arrangements made whereby it could be transmitted on an exchange basis or by wheeling to points on the Edison Company system or elsewhere on other power systems in the state.

SENATOR REGAN: On page 11 of your paper, you said if the present market for fuel oil were destroyed, the oil companies would no doubt change their processes to eliminate fuel oil production.

From the rest of your statement in that paragraph, I would get the inference that if it lost the PG&E market, the present market for fuel oil would be destroyed.

Is that what you meant?

MR. GERDES: Well, not the entire market. A part of the present market would be destroyed. There are some industrial customers that buy fuel oil. Some of it goes into ships, and the Southern California electric companies also purchase fuel oil.

SENATOR REGAN: But I want to be sure for the record here. My impression from what you have said is that, in effect, if this comes into being, you would be no longer a customer, so therefore the fuel oil market would be destroyed,

and for the record, I want to be sure whether that is true or not true.

MR. GERDES: That is certainly not true, unless the same thing happened with the other power companies. But, I dare say that if this two million kilowatts of power were brought in and absorbed in California, there would be very little fuel oil consumed in California.

SENATOR REGAN: Then, the conclusion is that, in all, fuel oil consumption in the generation of energy would be affected by the introduction to California of this specific northwest energy.

Therefore, in your opinion, would you feel it would seriously impare the fuel oil market?

MR. GERDES: I am saying, if anything like the quantities of energy are brought into California that have been discussed here today, it would have a very serious effect upon all of the oil refiners in the state.

The fact that one of the oil refiners, the Tidewater Associated, have already converted their refinery processes from producing fuel oil to coking, and the other refiners have told us that if their existing markets are destroyed, that is exactly what they will do -- well then, we might go on for several years and rely on this supply and then a real dry year comes along and we need fuel oil to meet the requirements, because in that year, let's say, there is little, if any, power coming from the northwest, and the oil refiners at that time would say, "We are sorry, we can't supply you with fuel oil;" and that would be a very serious situation, because we must have fuel to run these steam plants of ours, particularly in the dry years.

SENATOR REGAN: Would the fuel oil companies -- would the oil companies join with you in your opinion, saying this

statement is correct, or substantially correct, as far as you know?

MR. GERDES: Well, all I can do is tell you this: Before the Senate Committee in Washington, they sent a representative there and told the Congress that in substance, what I am stating here.

No doubt they would state it in a better way and no doubt, more accurately, but that is the substance of what they had to say to the Senate Committee.

SENATOR REGAN: Now, in your statement -- I think this is a statement you made without reference to your paper -- you said, in effect, that if such and such happened, meaning the bringing in of this substantial amount of power to California, "Local water project development would be stopped."

Now, I would like to have a further expression from you as to what you mean, because in our overall discussions, a local project is not the same as a reservoir project.

For example, necessarily so, under the California Water Plan, a local project probably would mean a local development for the use in a local area, whereas a statewide project is something else.

Which do you mean with this statement?

MR. GERDES: Here is the problem you have to face. The Pacific Gas and Electric Company has a load growth each year to the order of 350,000 kilowatts or thereabouts. Now, as I referred to in this statement, in order to absorb the power from any hydro development in the state, whether it is constructed by the state of California or constructed by a local agency, if that power is going to have a market in our area, it has to be scheduled to come in no faster than the load growth will absorb it, so far as the firm power is concerned, and if we were to look, for instance, to the next year, to buying

a million kilowatts, let's say, of power from this transmission line, the power to be generated in the northwest, assuming it is firm power, which apparently it would not be in the light of the statements here, but assuming it is, why then that would cut down the amount of firm power that we could take into our market.

Now, of course, Southern California presents another situation. But the Northern California market, as we call the northern and central California -- in other words, the load of the PG&E system, is approximately forty per cent of the total power load of the state, as I recall it -- isn't that a round figure?

MR. BONNER: Yes.

MR. GERDES: That is approximately correct. So, that is the situation with regard to forty per cent of the state's market.

If you take that market away while we are absorbing a million kilowatts from the northwest, why, the local development -- I mean, the water development in the northern and central California would have to slow down, unless they could find a market some other place, of course.

SENATOR REGAN: Just one more on that. The available water for development of reservoir projects are all in the north. There is nothing left anyplace except in the north, so when you talk about the development of these projects, you don't define a local project to mean a small local project.

MR. GERDES: That is right; that is right.

SENATOR REGAN: Now, one final question. You heard my questions directed to Mr. Brody or Mr. Schultz, having to do with the timetable of the California Water Plan, and the possible interference that the dumping of this power into California might have.

I believe you heard Brody state that he felt it would have no adverse effect. He felt, in fact, it might stimulate the construction of the reservoirs in the California program.

Do you agree or disagree with that?

MR. GERDES: We disagree with that. We do not see how you would have a bigger market if you brought in a million kilowatts from the northwest and added it to the present supply.

It is very difficult for us to follow that argument.

CHAIRMAN TEALE: Senator Cobey.

SENATOR COBEY: Just one question, Mr. Gerdes. What does the PG&E pay for the pump energy to the CVP now; what is the rate?

MR. GERDES: Approximately 1.9 million kilowatt hours.

MR. BONNER: That is correct. It is on the third block in the Central Valley schedule, which runs four, three, two mills less, say, five per cent discount for high voltage delivery.

SENATOR COBEY: So you are paying something in the neighborhood --

MR. GERDES: That is for the so-called surplus or dump energy.

SENATOR COBEY: Yes.

CHAIRMAN TEALE: Are there any further questions?

Senator Williams?

SENATOR WILLIAMS: We settled a problem over here, Senator.

CHAIRMAN TEALE: Thank you very much, Mr. Gerdes.

MR. GERDES: Thank you very much, Mr. Chairman and members of the Committee.

CHAIRMAN TEALE: Gentlemen, we are running a little bit

behind today, but we are going to go right ahead, anyway.

Next we will have Mr. H. A. Lott, Manager, Power Supply Services, Southern California Edison Company.

MR. LOTT: Mr. Chairman, my name is Harry A. Lott. I am Manager of Power Supply Services for Southern California Edison Company.

This statement is presented in compliance with the request contained in letter dated August 3, 1960 by Honorable Stephen P. Teale, Chairman of this Committee.

In answer to Senator Teale's first question:

Southern California Edison Company supplies electric utility service to a population exceeding 4.8 million people, in an area of about 20,000 square miles in Central and Southern California. Because of the great development in Southern California, the demands for electric power in the area served by the Company have been increasing at a rapid rate and it is estimated that substantial increases in the demands for electric service will continue into the future.

Giving consideration to the actual requirements of the first seven months of 1960, it is now estimated that the Company will generate 19,250 million kilowatt hours at a peak demand of 3,480,000 kilowatts during 1960, an increase of 9.5% from the 1959 requirements.

By five-year intervals, the annual energy requirements and peak demands are estimated to increase during the next twenty years as follows:

SOUTHERN CALIFORNIA EDISON CO. ESTIMATED PEAK DEMANDS AND ENERGY

Year	Annual Generation Millions of Kilowatt Hours	Annual Peak Demand Thousands of Kilowatts
1960	19,250	3,480
1965	25,000	4,640
1970	30,600	5,650
1975	37,200	6,800
1980	43,700	8,000

If such increases are realized the demands in 1980 would be 2.3 times the demands of 1960.

It is not possible to submit an informed answer to Senator Teale's second question, relating to annual estimates of the power requirements for the pumping of water for irrigation and domestic uses, whether for projects constructed by the State or by local agencies.

The uniform system of accounts prescribed by the Federal Power Commission and the uniform system of accounts for electrical corporations prescribed by the Public Utilities Commission of the State of C lifornia, do not segregate electric power used for pumping water, from other uses for electric power under the same account classification. When power is supplied to a dairy, for example, the Company does not segregate the power used by milking machines or for feed grinders from the power used for pumping water. The basic records needed to estimate the amount of electric energy used for water pumping are not available and we regret our inability to furnish the Committee with such an estimate.

We have not received a copy of a report from the Consultants to the Department of Water Resources on benefits of an interconnection between Pacific Northwest and California electric power systems. Our knowledge of this report consists of information in press releases, reports on hearings before the Irrigation-Reclamation Subcommittee of the Senate Committee on Interior and Insular Affairs, and conversations with representatives of the Consultants. Representatives of this Company have, however, cooperated in the preparation of a report containing related subject matter. In 1959 we participated in the "Pacific Northwest - California Interconnection Study, Giving Power Requirements and Resources - State of California," which was prepared by the Federal Power

Commission, San Francisco Regional Office, and dated October 8, 1959. The material inthe October 8 report was incorporated in the "Study of High Voltage Electrical Interconnection between the Pacific Northwest and California" by the Secretary of the Interior in response to resolution adopted by the Senate Committee on Interior and Insular Affairs on May 19, 1959. This latter study dated February 1960 was preapred by Bonneville Power Administration.

All of the Pacific Northwest studies we have seen to date indicate, under favorable water conditions, a substantial supply of intermitten, interruptible spill power. Edidson has not been informed of any study of Pacific Northwest loads and resources indicating a year-round firm power supply which is available for export. Our experience with transmission line costs leads us to believe that the cost of Pacific Northwest power delivered in Southern California could not compete with the costs of Local sources of supply, unless someone other than the receiver paid a part of the costs of the transmission line and a part of the costs of power production in the Northwest.

Southern California Edison Company has long years of experience with problems relating to the costs incident to the generation and transmission of electric power. Because of this experience, combined with information obtained while cooperating with the Federal Power Commission and the Bonneville Power Administration in the preparation of the February 1960 study, we are frankly dubious of the economic feasibility of transmitting electric power over the great distance, exceeding 1,000 miles, between the Columbia River and the load center in Southern California.

In addition to questioning the economic feasibility of transmitting electric power from the Pacific Northwest to

Southern California, the Company has a responsibility to provide its customers with a high quality and a dependable continuity of electric servce. Neither the Company nor its customers could be satisfied with any lowering of service standards. Years of experience indicate that the Company must control the operation of its generation and transmission facilities to meet the necessities of modern high quality electric servce. Southern California Edison Company would not, therefore, in view of information we have seen to date, be interested in purchasing energy from the proposed Common Carrier transmission line.

Mr. Chairman, that is the end of the statement.

CHAIRMAN TEALE: Thank you, Mr. Lott. Are there any questions from members of the Committee?

Senator Regan.

SENATOR REGAN: Mr. Lott, on page 4 of your statement, you state: "We are frankly dubious of the economic feasibility of transmitting electric power" -- and so on.

Do you also include financial feasibility there?

MR. LOTT: I get bothered by the difference between financial and economic feasibility. To me, they are both the same thing.

SENATOR REGAN: I mean, as far as your paper is concerned, they could be interchangeable?

MR. LOTT: Interchangeable, yes, sir.

SENATOR REGAN: I believe the position of the Pacific Gas and Electric Company was that it could take in power and distribute it through its system, if I am not mistaken, on what was said here today.

Your position is not that at all, is that so?

I mean, you feel that unless the cost were absorbed by someone other than the customer -- I presume you have in mind

Uncle Sam -- in the building of the line and of the facilities that generates the power, that it probably would cost you too much in Southern California, so that you couldn't become a customer for this dump power?

MR. LOTT: That is correct. If we had the costs of the transmission line plus the costs of production of power from the Pacific Northwest together, we would expect those costs to exceed the cost of generation in Southern California.

SENATOR REGAN: Would your position be any different if you were in the service area of the PG&E? Is the factor that makes your position different than PG&E the additional miles that the energy has to be transported?

MR. LOTT: I don't think it would be materially different. From a theoretical standpoint, we have an ideal situation of attempting to integrate hydro power in the Pacific Northwest with steam power in California, either in the north or the south.

The factor of the cost of the interconnection is the thing which we believe would render it either financially or economically unfeasible.

SENATOR REGAN: Well, as I understand the PG&E position, from its location, say, in Northern California, if it was the market for the energy, with its steam generating plants, it could probably use the energy and distribute it to its customers without loss, and I presume at a reasonable profit to the private public utility.

MR. LOTT: My understanding was -- I may be wrong -- the Pacific Gas and Electric Company could absorb the energy from the small 200,000 kilowatt interconnection.

SENATOR REGAN: Well, is that correct, Mr. Gerdes? I don't want to be misquoting you. You were talking about a limited amount of power.

MR. GERDES: We were speaking of taking -- we believe we would and could take up to two billion kilowatt hours a year over the interconnection we propose. But our statement also goes on to say that we did not -- at the end of the statement, we did not feel we could be a party to purchasing power from a large common carrier line.

SENATOR REGAN: I understand that, but I am wondering about the economics or financial feasibilities. That is the discussion here.

I don't want to take anything out of context. I am trying to get some information.

Do you know what the probable added cost would be if you were to become a customer for this power for your location and the PG&E location?

MR. LOTT: Without making a study, I couldn't tell, but it is about halfway between the Bonneville area and Southern California -- it is about 400-plus miles up here.

So, insofar as the cost of the transmission line alone is concerned, it might be about half as much, too.

SENATOR REGAN: One final question. You feel that going to the word "economic" rather than "financial" feasibility, that there are no economic factors for the use of that power in your service area, which would probably make you change your position?

MR. LOTT: We haven't seen the final study, but over the years of experience and experience of the cost of long, high voltage transmission lines, we cannot see how the cost can be lowered so much that it would compete with the cost of power in Southern California.

CHAIRMAN TEALE: Are there any further questions?

Thank you, Mr. Lott.

Mr. Ivan Bateman, member of the Board of Governors,

California Municipal Utilities Association, and Assistant Chief Electrical Engineer, Los Angeles Department of Water and Power.

Mr. Bateman.

MR. BATEMAN: Mr. Chairman, I would like to make the statement on behalf of the California Municipal Utilities Association first, if I may.

As a Director of the Association, I have been asked to make a statement to this Committee. This Association is comprised of publicly-owned utilities serving electric, water or gas or other combinations of these services.

Our members render at least one of these services to about seventy per cent of California, or about ten million people.

CHAIRMAN TEALE: Would you start again?

MR. BATEMAN: As a Director of the California Municipal Utilities Association, I have been asked to make a statement to your Committee today.

This Association is comprised of publicly-owned utilities serving electric, water or gas or a combination of these services. Our members render at least one of these services to about seventy per cent of California, or about ten million people.

The Association, at its February meeting in Santa Monica, reiterated its position in opposition to the United States Department of Interior's proposal to contract with Pacific Gas and Electric Company and California-Oregon Power Company for sale of surplus power from the Bonneville system.

The main reason for the Association's opposition is based on the firm belief that any power intertie between the Pacific Northwest and California should be an extra high voltage, large capacity, common carrier line, which can be used by both private

and public agencies.

Moreover, the Association believes that legislation is needed to protect the areas of origin against the export of power which might be needed in the areas of origin.

The present Interior Department proposal does not meet these standards.

Now, I will not burden the Committee by reading the resolution. It is printed and has been handed to you.

Now, on behalf of the Department of Water and Power of the City of Los Angeles, I would like to say that:

By letter of August 4, 1960, your chairman, Senator Stephen P. Teale, invited our comments on the benefits from an interconnection between electric systems in California and the Pacific Northwest as presented in a statement by Mr. Sol E. Schultz on June 15, 1960 before the Irrigation and Reclamation Subcommittee of the Interior Committee of the United States Senate.

I have received the statement by Mr. Sol E. Schultz and the following comments present the views of the Department of Water and Power relative to his statement and to benefits generally resulting from interconnections between electric utilities.

Interconnections between utilities have long been recognized as beneficial. A major benefit derived from interconnections is that they provide for use of surplus and most economic power generation available due to load diversity between interconnected systems and due to diversity of water conditions in interconnected areas. Another major benefit is the availability of stand-by capacity through the intertie in cases of system emergencies thus requiring less overall generation to provide dependable electric power to the customer.

Specifically, in the case of the proposed interconnection between electric systems in California and the Pacific Northwest, if firm electric power were available to the City of Los Angeles from the interconnection, it would delay the construction of thermal capacity. With the possible exception of additional hydroelectric power from the Colorado River at Bridge Canyon, the City's increasing load demands will otherwise be met from thermal sources.

The available surplus hydroelectric energy from the Pacific Northwest would replace fuel generated energy. Not only would this surplus hydro energy conserve fuel, but it would help to reduce another problem in the Los Angeles Basin, that of smog.

For these reasons, and because of the increasing cost of fuel, the City of Los Angeles would look favorably towards power from the Pacific Northwest, provided that its cost and reliability were comparable to alternative thermal power.

Senator Teale's letter also requested certain specific information:

1. A forecast of our annual electric power requirements for the next twenty years. Attached to this statement you will find such a forecast. It indicates an annual system demand of 1,055,000 kw and annual energy requirements of 8.2 billion kilowatt hours for the 1960 calendar year. By 1980, we expect a system demand of 4,510,000 kw and energy requirements of 24.9 billion kilowatt hours.

2. A forecast of energy requirements for the pumping of water for agricultural or domestic uses. Essentially, at present, we anticipate no such requirements on our electric system. Very infrequently, we pump water in the Owens Valley area to increase the supply of water to our Owens River Aqueduct and annually, a small amount of electric energy

is used for ground water pumping in the Los Angeles area. These requirements, however, are relatively small and are believed to be insignificant. Agricultural water requirements in Los Angeles are decreasing because of urban development of agricultural land. Remaining requirements are met largely from our Owens Valley Aqueduct source.

3. A summary of our plans for possible purchases of power from the State Department of Water Resources. At present we are conferring with the Department of Water Resources regarding the possible sale of off-peak and continuous power to the State for pumping water in its aqueduct and the possible purchase of on-peak power from the State.

CITY OF LOS ANGELES-DEPARTMENT OF WATER AND POWER-POWER SYSTEM
ESTIMATED ANNUAL NET ENERGY FOR LOAD AND PEAK DEMANDS

Year	System Net Energy for Load Millions of Kilowatt-hours	Annual System Peak Demand Megawatts
1960	8,193	1,655
61	8,885	1,765
62	9,601	1,880
63	10,345	2,000
64	11,124	2,120
65	11,800	2,240
66	12,400	2,360
67	13,100	2,480
68	13,900	2,605
69	14,600	2,730
70	15,400	2,860
71	16,200	3,000
72	17,000	3,140
73	17,800	3,290
74	18,700	3,450
75	19,700	3,620
76	20,700	3,800
77	21,700	3,980
78	22,700	4,160
79	23,800	4,340
80	24,900	4,510

CHAIRMAN TEALE: Thank you. Are there any questions by members of the Committee?

I have one. On page 1 of your last paper, you were

reading, in the paragraph that begins "Specifically," you state:

> "Specifically, in the case of the proposed interconnection between electric systems in California and the Pacific Northwest, if firm electric power were available to the City of Los Angeles --"

would you explain just what you mean there?

As I understand it, the power we are talking about today is not firm power. Now, are you talking about power that would come from the intertie?

MR. BATEMAN: We are referring here specifically to the proposal made by Mr. Schultz and explained this morning in which there would be some firm power by the use of the hydroelectric power that would be available from the systems in the two states, plus some steam generation.

Now, if the power was not available on a firm basis, we still would be interested in the dump power, for it would serve to replace the fuel that would be required to generate the same power in steam electric plants.

CHAIRMAN TEALE: So you would be available for either the firm or the dump power. Thank you.

Senator Regan?

SENATOR REGAN: Just one other question. On the last page, in your paragraph number 2, you talked about a small amount of electric energy being used for ground water pumping in the Los Angeles area.

Then you said:

> "Agricultural water requirements in Los Angeles are decreasing because of urban development of agricultural land."

Do you mean Los Angeles City or County?

MR. BATEMAN: Los Angeles City, I am referring to. We

serve primarily the City of Los Angeles, the area within the city limits.

I might say that in addition to water we get from our Aqueduct from the Owens Valley, we also buy some water through the Metropolitan Water District, and we also pump quite a quantity of water from wells within the city limits, and some of our power is used for that purpose, of course.

SENATOR REGAN: As far as you can see in the foreseeable future, in the City of Los Angeles, agricultural use of water will be permanently replaced by a limited water use?

MR. BATEMAN: That is right.

SENATOR REGAN: I have no other questions. Thank you.

CHAIRMAN TEALE: Mr. Henry Glaves. Mr. Glaves is President, Northern California Municipal Electric Association.

Mr. Glaves.

MR. GLAVES: Mr. Chairman, my name is Henry A. Glaves and I am City Manager of the City of Lodi and President of the Northern California Municipal Electric Association. Our Association was organized for the twofold purpose of providing an agency through which a uniform basis for the purchase of electricity from the Pacific Gas and Electric Company could be achieved and through which continued provision for an alternate source of dependable power might be assured. These purposes, we believe, were in the best interests of our member cities and, in turn, would legislate to provide ultimate benefits to every electric consumer in the State.

The members of our Association include the cities of Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, Santa Clara and Ukiah and represent each of the municipally-owned electric distribution systems in Northern California. It should be emphasized that our purpose is confined to broad areas of basic policy in the field of

electric distribution and that as an organization we are agreed to take no position which takes from the legislative bodies of our individual members a complete freedom of action.

In 1959 our member cities collectively served a total of 90,160 customers with a total of 766,904,204 kilowatt hours of electric power. With anticipated growth we will be serving 120,000 customers with 1,341,000,000 kilowatt hours in 1964 and by 1969 the total will reach 160,000 customers with 2,034,000,000 kilowatt hours. The combined maximum demand for member cities in 1959 was 139,882 kilowatts with anticipated maximums of 257,800 in 1964 and 374,000 by 1969.

It has consistently been the policy of our organization that a source of power other than that provided by the private utility companies is essential to the maintenance of reasonable rates. In the past, we found that our ability to negotiate favorable rates was greatly enhanced when there was power available from the Central Valley Project. Not only does our experience indicate that the availability of Federal power from the Central Valley Project has had a beneficial effect upon the rates we have negotiated, but also we believe that indirectly it has greatly benefited other power consumers in our area. Consequently, an economically feasible program which would substantially increase the firm power available to preference customers from the Central Valley Project would be endorsed by the Northern California Municipal Electric Association as being in the best interest of its members.

It is our understanding that there exists in the Pacific Northwest large quantities of power and energy for which there is no market at present and which could be made available to California through a major high voltage interconnection between the Pacific Northwest and California. A program for the transmission to California of power which is in excess of the

present and future needs of the northwest states would appear to offer substantial benefits to both the Pacific Northwest and the power consumers of California, whether they be agencies of the State and Federal governments or customers of public and private utilities.

We believe the investigation and study being conducted at the request of the State of California with the cooperation of the states of Oregon and Washington must be given careful consideration. If it is determined that the high voltage intertie is both financially and engineeringly feasible, as preliminary reports indicate it is, the Northern California Municipal Electric Association will view the project as an important step in meeting our stated objective of increasing the amount of firm power available to preference customers through the Central Valley Project.

While our Association is committed to the view that an alternative source of firm electric energy is essential to the provision of adequate public service at reasonable cost, the choice as to supply, we believe, is clearly an individual one, to be made in the best judgment of each City Council on the basis of economic and practical considerations. As an organization, we feel it essential that the power be available in order that a choice be provided. As a matter of fact, the cities of Roseville and Redding are now being served with Central Valley Project power and are especially interested in the power which would become available through the proposed intertie with the Pacific Northwest.

I wish to thank the Committee for this opportunity to appear before it and present our views.

CHAIRMAN TEALE: Thank you very much, Mr. Glaves.

Are there any questions by the Committee?

We are going to take a five-minute recess for the

benefit of the reporter. We will resume at 4:30 sharp.

(Thereupon, a short recess was taken.)

CHAIRMAN TEALE: I will call the meeting to order.

Will the few remaining members of the Committee take their seats?

Gentlemen, we are about an hour and a half behind time, but I have had a request already from Mr. Gray to be permitted to testify tomorrow. Is there anyone else in the same category?

I am sure somebody is going to get left this afternoon.

Our next witness is Mr. J. Blaine Quinn, Master, California State Grange. Mr. Quinn.

MR. QUINN: Mr. Chairman, my remarks will be very, very brief. My name, as you have said, is J. Blaine Quinn, Master of the California State Grange.

We have listened to a lot of learned testimony today, but one question I would like to ask and leave with the Committee is that in all the discussions, no one has given the concrete estimate of the cost of transmitting this power from Bonneville Dam to California, on the basis of a 500,000 kilowatt transmission line, similar to those used in Soviet Russia, and my thought would be when they do get that actual cost brought down, not in millions of dollars, but in kilowatts compared with steam generating power, then you would have a better basis to work on.

That is all I have to say.

CHAIRMAN TEALE: What is your main interest, Mr. Quinn; cheap power, I gather it would be?

MR. QUINN: Well, cheap power, yes, absolutely.

CHAIRMAN TEALE: And dependable.

MR. QUINN: That is all I have to say.

CHAIRMAN TEALE: Do you have a prepared statement?

MR. QUINN: No, I do not. I had one, but in view of all the testimony given, it wouldn't have been necessary.

CHAIRMAN TEALE: You tore it up?

MR. QUINN: Tore it up, yes.

CHAIRMAN TEALE: You should never do that. (Laughter.)

Are there any questions of Mr. Quinn?

Thank you, Mr. Quinn.

Next we have Mr. Robert Durbrow, Executive Secretary, Irrigation Districts Association of California. Mr. Durbrow.

MR. ROBERT DURBROW: Chairman Teale and Members of the Committee. My name is Robert T. Durbrow and I represent the Irrigation Districts Association of California. As you people all know, the 200 member agencies of the Association are the distributors of almost three-quarters of all the water which is put to use for any purpose in California.

We have to get that plug in.

We are pleased to be able to appear today to express the interest of the Association in determining the facts about any proposed power intertie between California and power systems in the Pacific Northwest. Our interest is based upon three primary objectives of the Association which are intimately associated with the development, distribution and use of hydroelectric power.

Our first of the three objectives is the orderly and timely development of the water resources of the State. Importation of electric power that would slow the pace of water development, compete with the products of our water projects on the Federal, State, local or private leve, or create temporary supplies of power which must later be replaced by California facilities at a greater cost because of the delay, would appear to be a disservice to California.

Our second objective is closely related to the first.

It is our belief that the product which is and will continue to be increasingly scarce in California is water, not power, and that the development of water will require the income from power sales in those projects where power is produced which can be marketed outside of the needs of the project. To this end, it has been our policy to recommend that power developed at Federal, State or local water projects be sold at its full market value, to help the project. Some 14 water development projects involving our members are now planned, are under construction, or have recently been completed, in which the sale of hydro power makes or will make the water project possible. Each of these projects produces or plans to produce low capacity (peaking) firm power, so that all are vulnerable to competitive hydro power produced in the Northwest where the major water runoff season is often quite similar to that of California. Since California -- Northern California particularly -- can only absorb a limited amount of peaking power, the power from the Northwest would not necessarily even have to be priced lower than that of one of our proposed water development projects to cause the project to be postponed indefinitely.

Our third objective reflects the interests of another group of our members -- those districts in which water must be pumped by electricity to levels at which it will flow to the fields requiring irrigation. This objective, that electric power for pumping be supplied to districts needing it at the lowest cost obtainable, is a policy of long standing in our Association and affects many of our members. It is a valid reason for us to inquire objectively into the facts about any proposed new source of power for California. This objective is not necessarily inconsistent with the other objectives we have stated, since our membership as a whole has consistently

supported sound water development and a sound policy for sale of hydro power from Federal and State projects. Our power consuming districts, along with others, would object to the importation of quantities of power from the Northwest which would be sold at about the same price as that of our own water and power projects, if the effect of such importations was to delay or prevent the development of new projects in California. On the other hand, if it can be shown that a new source of low cost power can be supplied without serious conflict or detriment to California water development, we would be interested in the facts to document such a possibility.

With this brief background, we want to emphasize that there are many questions about the proposed power interies to which we do not know the answers, and which we respectfully hope this Senate Fact Finding Committee will help investigate before making a recommendation on the intertie problem. The following questions are some which, if not already answered by earlier testimony, we believe should be answered by those studying the power intertie proposal, and some of these questions have been recognized here today, as you know.

1. It is presumed that the California market for power has definite limitations. How much Northwest energy can be absorbed in the California market during summer months when the highest irrigation releases are made and the highest amount of incidental hydro power generated?

2. If the State is to buy Northwest surplus power for pumping, what power sources would the State use to pump water in those months when no Northwest surplus power is available?

3. We know that several districts and the PG&E have been considering the times at which additional hydro projects could be constructed that would be firmed by PG&E to bring the

greatest value to the projects. Wouldn't it be judicious to look at our own development program before bringing into the State substantial quantities of outside power?

4. Some of the districts have expressed fear that Northwest dump power would bring a big push for Federal steam plants to firm it, with the resulting combination decreasing the value of proposed hydro and water projects. That the push for Federal steam plants has developed would appear to be confirmed by testimony of H. Zinder and Associates. If power sales in California will support construction of a steam plant in Washington and 500,000-volt transmission facilities from the Northwest to Bakersfield, does it not seem probable that a steam plant within a few miles of the anticipated power load area in California would be a better investment?

5. Testimony indicates that the power load in the Northwest is growing and that by 10 or 20 years from now there will be no power available to send over the $200 million dollar power intertie to California. Won't we have to make up for the loss of that power, when it is all used in the Northwest, with facilities to generate the same amount of power here in California which, because of the delay, will cost us substantially more than if they were built in an orderly fashion in the near future?

6. Won't the building of power facilities to replace the intertie, plus the building of facilities to meet our expected growth, tax our financial and construction potential unnecessarily?

7. H. Zinder and Associates testimony includes the statement, "The interconnection would improve the feasibility of proposed California water projects by providing the means for coordination and by enlarging their marketing areas through availability of transmission facilities." We are sincerely

interested in how this would work. What minimum size would be required for a local project to be able to tie into the intertie line, and where could it tie in? If applied to district projects, how might such a tie-in be accomplished? Who would finance the district projects for tie-in to the intertie?

8. In testimony before the U. S. Senate Subcommittee on Irrigation and Reclamation in Washington, D.C., on June 15, the States of Oregon and Washington would not approve of any power intertie with the Northwest until the marketing area for Bonneville power has been so defined that the power preference rights, under which public agencies have priorities to Bonneville Power Administration power, would not be extended south of the Oregon border. This would appear to emphasize the temporary and surplus nature of power to be supplied over any intertie. Should the State or its agencies contract to repay the expensive investment in such an intertie, or should this kind of investment be made by the power companies which will be required to firm up the surplus power wich steam generated or other firming power, which will be required to firm up the surplus power with steam generated or other firming power.

Now, Mr. Chairman. those are the questions which had occurred to us, and there are others which you have been discussing here today.

In conclusion, I would like to indicate that we have two groups of districts here today, those who are interested in power development projects and who are therefore concerned about the influence of importing these quantities of power, at approximately the same time and value as their water projects produced; and the other group are interested in low pumping costs.

These districts that are interested in low cost for pumping are not necessarily indicating their approval of the major intertie, but indicating they are here today to try to find out if this is a logical means for a lower cost power for pumping for irrigation purposes.

The districts, just quickly, those that are interested in power development, are: Richvale Irrigation District; Oroville-Wyandotte Irrigation District; Yuba County Irrigation District; Browns Valley; Nevada Irrigation District; Placer County Irrigation District; Calaveras; Tuolumne No. 2; Merced Irrigation District; Oakdale; South San Joaquin; and the El Dorado Irrigation District.

I think there are representatives from most of those districts here. We might just ask them to stand, if you like, Mr. Chairman.

Those people who represent those districts, I think, make up a good portion of your audience here today.

Thank you, gentlemen.

Those who are interested in lower pumping costs are also represented here today in some numbers, and we have: Banta Carbona; Patterson Water District; Tri-County Water District; Glenn-Colusa Irrigation District; and the Metropolitan Water District.

All these are represented in the interests of low cost power for pumping. Would those representatives please stand?

Thank you, gentlemen.

CHAIRMAN TEALE: Is the Metropolitan Water District one of your members?

MR. DURBROW: Yes, one of our littler ones. They don't pay as much as Imperial Irrigation District, however.

SENATOR COBEY: I wonder whether Mr. Durbrow could insert in our record later a list of those districts and their projects,

and the amount of power that they either are selling or intend to sell.

MR. DURBROW: We would be glad to.

CHAIRMAN TEALE: Also the amount used by the pumping districts.

MR. DURBROW: All right; we will be glad to.

CHAIRMAN TEALE: Have we any questions now?

Thank you very much, Mr. Durbrow.

Next, we have Mr. B. W. Goodenough, Consulting Engineer, representing Tuolumne County Water District No. 2.

Mr. Goodenough.

MR. B. W. GOODENOUGH: I am B. W. Goodenough, Senior Member of the firm of Goodenough, Sudman and Overholser, Inc., Consulting Engineers, specializing in the field of Water Supply Development in the State of California. My experience record includes nearly six years of activity as Project Engineer for the Tri-Dam Project on the Stanislaus River. As is well-known, this project was brought to a successful conclusion, without receiving any assistance from either the State of California or the Federal Government, as a joint development of the Oakdale and South San Joaquin Irrigation Districts.

The financing of the Project, namely $52,000,000, was obtained from the sale of Revenue Bonds which were supported and guaranteed by a firm contract with the Pacific Gas and Electric Company, providing fixed annual payment for the hydroelectric energy developed on the Project, over a fifty-year period.

At the present time, another major water development project, namely the Oroville-Wyandotte Project on the South Fork of the Feather River, is now in the construction stage through sale of hydroelectric power to the same company. Similarly, plans for Virginia Ranch Dam are in progress for

the Browns Valley Irrigation District. Their basis of financing is parallel to that utilized on the Tri-Dam Project.

In the past, this same financing pattern was successfully and satisfactorily used in the financing and construction of Melones Dam for the Oakdale and South San Joaquin Irrigation Districts, Exchequer Dam for the Merced Irrigation District, and the works of the Nevada Irrigation District.

In all of these cases, the Irrigation Districts have been able to finance the construction of important improvements to their supply of irrigation water from the sale of the hydroelectric power. It has been accomplished without assistance from either the State of the Federal Governments, and, probably most important, without placing heavy burdens of debt upon the irrigation water user or land owner. These accomplishments have been made possible by the fact that the Pacific Gas and Electric Company has been able and willing to fit the hydroelectric power so produced into the load curve resulting from its marketing of power within California and to negotiate well-secured contracts over the period of years required for repayment of the construction costs, which provided a sound support for the Revenue Bond financing.

During the past year, the firm of Goodenough, Sudman and Overholser, Inc. was retained by Tuolumne County Water District No. 2 to study and recommend a feasible water development project that would improve the available supply of domestic and irrigation water for use within their District. By formal action, the Ruolumne County Water District No. 2 has authorized me to make this statement.

Through the courtesty of H. Zinder and Associates, we have been furnished a copy of a Statement, made by Mr. Sol E. Schultz to the United States Senate Subcommittee on Irrigation and Reclamation.

This statement presents the results of their study of a high-capacity interconnection between the power systems of the Pacific Northwest and those of California. We have given this statement some study and have taken particular note of H. Zinder and Associates finding that:

> "Using the surplus Northwest peaking capacity, one million kilowatts of firm power can be sold to California utilities to be used continuously over the peak hours, 8:00 A.M. to 10:00 P.M. Monday through Friday of each week except holidays. This peaking capacity would be supported by steam energy developed in California and in the Pacific Northwest."

When this finding is converted to the usual form for comparison, we find that H. Zinder and Associates have described a source of peaking power that would be available 14 hours per day 5 days per week for a total of 3,640 hours per year (neglecting possible holidays) or one having a Capacity Factor of 41.5%.

This happens to be exactly the Capacity Factor of the power developed by the Tri-Dam Project and being developed on the Oroville-Wyandotte Project now under construction. Thus, this represents the type of power which now fits into the peak portion of the Northern and Central California power load.

Reveneues from the sale of such power will be the principal source of funds for construction of the project we are now considering for Tuolumne County Water District No. 2.

Therefore, we are seriously concerned over the preliminary proposal to supply this type of power from the Pacific Northwest. By such a plan becoming reality, any project, requiring a market for power to support their irrigation benefits, would be completely deprived of that

market for an important period of years, until growth in California has absorbed the one million kilowatts it is proposed to bring to California.

We believe your Committee should study this feature closely and seriously before making a recommendation. The benefits of the so-called "Cooperative Development" of water supply projects in California are obvious. If such a development is stopped, demands for State and Federal sponsorship of the irrigation needs of local projects will develop at a time when such Agencies should be concerned only with the larger matters of water development on a State level, rather than a local level.

We wish to thank this Committee for the opportunity to present our thoughts on this important factor in the development and full utilization of the water supply of the State of California.

CHAIRMAN TEALE: A question arises: We talked considerably about the price here today. That is, what the intertie power would cost the PG&E. What price are we talking about now in this case for Tuolumne's project price of power?

MR. GOODENOUGH: In general, the price level which we believe should be used to estimate is the alternate cost of fuel-generated electricity at and near the load basis in California, and that is the comparison we are using in this particular case.

CHAIRMAN TEALE: What is it, in this particular case; how much is it?

MR. GOODENOUGH: Well, it would run, the dependable capacity, about $20.03 a kilowatt hour, and energy at two and seven-tenths mills.

CHAIRMAN TEALE: 2.7?

MR. GOODENOUGH: Yes, sir.

CHAIRMAN TEALE: One other question. On page 2 of your presentation here, you talk about an important period of years.

What are you talking about there, five, ten, fifteen, twenty, or what?

MR. GOODENOUGH: I would think probably from the figures I have heard today, and the discussion, it would probably be something in the order of five, and possibly ten.

I can't say that I am an expert in saying how long it would be, but it would delay, I think seriously, developments such as we are contemplating.

CHAIRMAN TEALE: You feel it would take that long for the California market to absorb a million kilowatts?

MR. GOODENOUGH: Yes, sir.

CHAIRMAN TEALE: Are there any further questions?

Thank you very much, Mr. Goodenough.

Mr. Gray has indicated he would like to testify tomorrow morning.

Next, we have Mr. E. H. Spoor, Mountain Counties Water Resources Association. Mr. Spoor.

MR. E. H. SPOOR: Mr. Chairman, and your three faithful survivors. (Laughter.)

CHAIRMAN TEALE: We are very lucky. I almost quit myself a little while ago. (Laughter.)

MR. SPOOR: My name is E. H. Spoor. My position is Executive Director of the Mountain Counties Water Resources Association. This is composed of the 10 counties in the Sierra, from Mono to Sierra inclusive.

1. Water development in California as contemplated in the California Water Plan can be wrecked by the importation of electric energy at this time, whether it be at the instigation of the Federal Government, the Sate, or any other entity.

2. Proposition #1 on the November ballot, known as the Feather River Project, authorizes construction primarily for exportation. Except for five exceedingly small dams on the upper Feather no water development is authoirized in these Mountain areas of origina; similarly, Bureau of Reclamation projects are for exportation and not local development.

3. Root hog or die was the situation in these Mountain Counties. Realizing this, they rolled up their sleeves and went to work to develop their own water resources. You are well aware, Mr. Chairman, that in your own home county the Calaveras County Water District has spent some one-half million dollars for engineering, feasibility studies, and planning. Placer County and Nevada County, the latter rhgouth the medium of the Nevada Irrigation District have spent thousands similarly. Sierra, Tuolumne, Amador, Mariposa and El Dorado Counties have appropriated money and are contemplating future water developments - all of these are premised on power revenues.

4. Please recall that one cent in the tax rate of Sierra County raised slightly over $600 while the same cent in Los Angeles County raised a million fifty thousand dollars. Property assessments in the Mountain Counties cannot practically finance water development. It requires power revenues.

4. Southern California agencies such as the Los Angeles Bureau of Water and Power and the Metropolitan Water District can, with broad and rich tax bases, raise funds practically via taxes. The MET, to its everlasting credit, has in the past and has indicated its willingness in the future, to release itself from the tentacles of bureaucratic dictation involved in Proposition #1 and go to Northwestern California at its own cost on the sound premise that he who benefits should pay.

6. The Department of Water Resources estimates that

the Feather River Project, promulgated in Proposition #1, amounts only to about 1/7th of ultimate water development in California. Local power revenues must supply financing for much of the remainder.

7. It is amazing to read in the Schultz statement of June 15, 1960 that: "large quantities of power -- could be made available to California for the next 10 to 20 years ---. Provision would be made for recapture of such power when it can be absorbed by the Pacific Northwest market."

8. Thus, just when power demands are peaking for boosting water over the Tehachapis, the power is to be recalled. This fails to make logic.

9. Importation of electric energy from Bonneville would supply California with power which otherwise would be supplied from local projects, thus depriving California of water and power resource development in the Mountain Counties of origin which are dependent upon such power revenues. This would also deprive the State of the increase in its economy as a result of this vast additional employment and construction.

10. We respectfully urge that your Honorable Committee oppose this Bonneville Intertie as long as California can and will meet the demands for electric energy.

Mr. Chairman, may I make a couple of observations, as a result of having sat through this entire session today?

The very pertinent questions of your Committeemen, seem to me, together with the statement of Mr. Gerdes of the PG&E, have proved rather conclusively that this is not the propitious time for this intertie.

In the last few weeks, I have talked with the chairman of the Board of the Southern California Edison Company, and as recently as yesterday, I talked with a representative from the PG&E. There is a little confusion, I think, in the use of the

word "shortage" and the use of the words "increased demand."

There is no shortage now, and Mr. Schultz admitted that this morning, either in Northern or Southern California. There is no shortage in the imminent future and there is no shortage in the distant future of power in California.

You now have interties between the Southern California Edison Company, the PG&E, and the other power companies. Not only that, but you have assurance of all the power that you will need in any time during the future when this population of ours is supposed to increase to around forty or forty-five million.

I think we have the cart before the horse in this discussion of coal versus oil. This coal pile up here in Cle Elum, a good many hundreds of miles from California, seems to me to be a mysterious situation.

I don't know how much coal they have up there, and I can't for the life of me see why you would want a standby development for steam up in Cle Elum, Washington, when you are talking about consumption down in Southern California, or even California.

It seems to me that is about as logical as having a standby of a horse and buggy in your barn these days.

Now, Reno and Carson City at the moment, true enough, could stand a very large supply of kerosene lamps and candles, because they are without juice.

Another thing we are now doing what was ridiculed in the funny papers ten years ago. We are actually physically contacting the moon. Your scientists and your power people feel that atomic energy is imminent, probably in the next ten years. By the time Bonneville would be withdrawing its power, you will have atomic energy, which is cheaper than any other fuel that we have available.

Incidentally, the supply and the price of coal -- the supplies have been diminishing in this country and the price of coal has been going up, whereas the price for oil, which is the fuel used for your steam standbys in California, has been not only going down, but oil is a drug on the world market.

If any of you are unfortunate to own some oil stocks, as I happen to, you will know that is no joke. Mine happened to have dropped in two.

Now, there is plenty of oil available for all the standby steam plants any and all electric power companies need in California.

Now, just one final thing. We have stated -- it has been stated today that the Bonneville intertie would help California water development. It is my humble opinion that that would help California water development just as much as the importation of foreign automobiles would help the profits of American manufacturers.

Thank you very much for listening, Mr. Chairman and gentlemen.

CHAIRMAN TEALE: Thank you, Mr. Spoor. Are there any questions from the Committee?

MR. P. J. MINASIAN: I have a brief statement I would like to make, if I may.

CHAIRMAN TEALE: Mr. Minasian.

MR. MINASIAN: I appear here as the attorney for the Oakdale Irrigation District, the Oroville-Wyandotte Irrigation District, the Nevada Irrigation District, and the Richvale Irrigation District.

I am sure the Committee will agree that water resources development is of prime importance to the continued prosperity of this state and that the irrigation districts and other local water agencies must shoulder a large part of that development

if it is to be done on an economic and sound basis.

However, we must face the fact that low cost water development has already been accomplished and any present large-scale district financed development is dependent upon sale of power that can be produced at the present full market value of that power.

Two of the districts I represent (the Oakdale Irrigation District and the Oroville-Wyandotte Irrigation District) serve as cases in point, showing what can be accomplished.

The Oakdale Irrigation District, until recently, had a very inadequate water supply which was rationed each year and only partially took care of a part of the growing season. The result was severe financial loss to the farmers in the district.

That situation is now much improved, as the district jointly with the South San Joaquin Irrigation District constructed the Tri-Dam Project on the Stanislaus River with reservoirs storing 225,000 acre feet of water annually.

Financing was possible because the water also produced 81,500 kilowatts of power sold at the maximum price the market would bring. This, over a fifty-year financing period, will retire the $52 million in power revenue bonds issued to finance the project.

Irrigation water is produced, but power pays the bill.

The same is true of the South Fork Project now under construction by the Oroville-Wyandotte Irrigation District. That project will produce 158,000 acre feet of stored water annually for irrigation and domestic purposes.

But, again, 87,500 kilowatts of power produced pays the $62 million construction cost.

The project not only benefits the district and Butte County, but does also provide water for the Yuba County Water

District in Yuba County.

The other two districts have similar projects in the advanced planning stage. The project of the Nevada Irrigation District will cost $45 million and that of the Richvale Irrigation District, $120 million. They are both feasible, and together will produce 430,000 acre feet of much needed new water storage.

The welfare of the state requires that they be built, but this can only be accomplished if the present market for power remains. The intertie proposal will destroy or seriously impair that market.

The characteristics of the power produced by the two sources are the same and the intertie proposal would flood the market for many years. It would mean that local development of multi-purpose water projects would virtually come to an end.

A question that must be answered is whether a permanent sound development of the water and power resources of this state is not more important than a temporary supply of power from the north.

We feel the Committee would be working a disservice to the welfare of the state if, by recommending the intertie, it, in effect, decided that water development in the state by local agencies must be postponed, and by postponement in many cases, it means that the projects will never be built.

CHAIRMAN TEALE: I would like to clarify something. The Committee isn't recommending anything. We are simply here for information, to find out what the consultants have determined to date.

So, if we get ready to recommend something, we will let you know in the future.

Next we have Mr. Paul E. Lewis, Secretary-Manager of Calaveras County Water District, San Andreas, California.

MR. PAUL E. LEWIS: Mr. Chairman, gentlemen. I have a prepared statement here, but for the sake of brevity, we will only read into the record a very small portion of it.

Calaveras County Water District has just completed a study to furnish irrigation and domestic water for the present and future needs of the county.

This study has been under way since the district was first organized, in 1946, and this cost, to date, is in excess of some one-half million dollars and many hours of dedicated effort.

The potential agriculture of Calaveras County has been determined and irrigation methods have been found to be economically feasible on some 93,000 acres of its lands.

Our recreational potential, with adequate water available, will be greatly enhanced to the benefit of all persons who enjoy the outdoor life in California and come to Calaveras for rest and relaxation.

Our project has been found to be engineeringly feasible and a market is available at this time for the sale of all hydroelectric power to be produced.

This power would be sold for peaking purposes and the revenues thus produced, together with the sale of water for irrigation and domestic purposes, would pay for the project.

Without the sale of such power, there is no project for Calaveras County and without it, there will be little or no water development in this area of California.

I thank you for the opportunity of making this presentation, and trust that the Committee will take due consideration of the proposal as submitted by the Bonneville intertie.

We concur with the previous statements of the Irrigations Districts Association.

CHAIRMAN TEALE: Thank you very much, Paul. Could you submit your entire statement to the reporter, so it can be incorporated in our Committee records?

(The following is the prepared written statement submitted by Mr. Paul E. Lewis to the Committee.)

STATEMENT OF MR. PAUL E. LEWIS, SECRETARY-MANAGER OF CALAVERAS COUNTY WATER DISTRICT, SAN ANDREAS, CALIFORNIA BEFORE THE SENATE FACT-FINDING COMMITTEE, AUGUST 23-24, 1960

Mr. Chairman and Members of the Committee:

We have reviewed with interest the statement of Mr. Sol E. Schultz, before the Subcommittee on Irrigation and Reclamation of the Committee on Interim and Insular Affairs United States Senate, on June 15, 1960 at Washington, D.C., concerning a proposed major power intertie between the power systems in the Pacific Northwest and California. While it is emphasized that this is a preliminary report, the conclusions reached and assumptions made are of grave concern to all of California, should they be adopted and placed in operation.

This statement presented by Mr. Schultz first admits a surplus of power and lack of a market in the Pacific Northwest. It is further pointed out that large quantities of power could be made available to California only by the construction of appropriate transmission lines into the area. The indication is that this is a temporary measure only, and to last from ten to twenty years. Later in this same statement a reference is made to additional benefits that might be obtained by including Canadian construction of Columbia River hydroelectric generating facilities. This too would be subject to recapture by Canada upon reasonable notice to the California users.

The advantage of this program to Canada and the Pacific Northwest was stated as serving two purposes, of

1. Increasing wholesale power revenues in the Pacific

Northwest, and

2. Delaying construction of high cost thermal capacity in California.

It was further pointed out that by using the surplus Northwest peaking capacity, one million kilowatts of firm power can be sold to California utilities to be used continuously over the peak hours, 8 a.m. to 10 p.m., Monday through Friday of each week except holidays. This peaking capacity would be supported by steam energy developed in California and in the Pacific Northwest.

We have no doubt that this program would increase the power revenues in the Pacific Northwest. We are also of the opinion that such a program would not only delay California's hydroelectric development, but would destroy an possibility of future water development by any district in California who is dependent on power income assistance to pay for the project.

Calaveras County is one of these areas where the sale of peaking power makes the project feasible and which would permit the county to secure an adequate water supply for the present and future residents of this area.

At the present time we cannot compete with nationally subsidized power produced from water supplies byond our comprehension. Ten or twenty years from now, with added construction costs and a further diminished water supply, this county would find it impossible to start a water project of any kind or description.

Calaveras County Water District was organized in 1946 for the express purpose of planning and providing an adequate water supply system for the use of all the people who choose to live within the boundaries of this county.

This District has just completed a study to furnish

irrigation and domestic water for the present and future needs of the county. This study has been under way since the District was organized, at a total expenditure to date, of some 1/2 million dollars and many hours of dedicated effort. The potential agriculture of Calaveras County has been determined and irrigation methods have been found to be economically feasible on some 93,000 acres of its lands. Our recreational potential, with adequate water available, will be greatly enhanced to the benefit of all persons who enjoy the outdoor life in California and come to Calaveras for rest and relaxation.

Our project has been found to be engineeringly feasible and a market is available at this time for the sale of all hydroelectric power to be produced. This power would be sold for peaking purposes and the revenues thus produced, together with the sale of water for irrigation and domestic purposes, would pay for the project. Without the sale of such power, there is no project for Calaveras County and without it there will be little or no water development in this area of California.

The proposed Bonneville Intertie would be in direct competition with our project. They would sell to the same utilities we consider as our future customers and at prices we could not meet.

This is a life and death matter to our area and other districts in similar situations. If we are deprived <u>now</u>, of the opportunity to proceed with our project to produce saleable power by this proposed intertie with the Bonneville Power Administration, we lose all prospects of retaining sufficient water for our future growth and prosperity.

The Pacific Northwest has no water problem. This sale of power is a profit making motive entirely on their part. At

the present time, most of California is trying to secure water for its future needs and most power development in California is incidental to paying for these needs.

It is most apparent that this proposed power intertie could cause irreparable damage to California's future water supply. Consequently, California's water supply should first be assured by incidental power development, if necessary, for every water project capable of being constructed under present financial conditions. This should be done before any commitments are made with any agency outside of California, which could in any way jeopardize this State's future development.

CHAIRMAN TEALE: Mr. McSwain?

MR. KENNETH McSWAIN: I also have a very short statement.

I am Kenneth R. McSwain, Chief Engineer and Manager of the Merced Irrigation District. Our District was organized in 1919 and serves an area of about 164,000 acres.

With our existing storage facilities we find ourselves short of irrigation water in about 3 out of 10 years and incidentally, we ran out of water completely last Friday, and about the same time last year. Consequently, we are planning a miltiple purpose project on the Merced River that will fulfill our needs and provide for flood control on the lower Merced and San Joaquin Rivers. Power and energy generation from the project will, if sold at rates now generally prevailing in Northern California, support all costs except those covered by a Federal flood control contribution.

The County of Mariposa will also benefit from the project under an agreement between the District and the County, which was executed early this year. The County will gain certain amounts of water and funds for the development of them when our Merced project is completed.

We cannot help but fear that large blocks of power and

energy brought into California from the Northwest will saturate the market for the amounts we must sell in order to finance our local development. The delay of project construction until Pacific Northwest power might be withdrawn would probably make our project financially unfeasible in view of rising costs.

We hope that your Committee will take these facts into consideration, bearing in mind that, if California's water resources are to be developed in accordance with its growth requirements, local, public owned districts must play an important part during the next few decades.

There is one more point, Mr. Chairman, that was brought up this morning and discussed somewhat at length. It was the matter of how an intertie could enlarge the market that we in Northern California might have.

Frankly, it is very hard for me to see how, when you absorb the line losses to get across the Tehachapis, it can compete with somewhat lower fuel costs and undoubtedly some charges to the use of the intertie -- how we would have any type of better market by the use of this intertie.

One thing, too, that I have noticed this morning, under the very able questioning of members of your Committee, Mr. Chairman: There seems to be considerable doubt as to whether or not this power is firm or is not firm, and I feel myself that that alone, that type of uncertainty in decision as to what we are thinking about, is now and can, if it goes on, be quite a deterrent to the development of the water and power projects that we so badly need here in California.

Thank you, Mr. Chairman.

CHAIRMAN TEALE: Thank you very much, Mr. McSwain.

Are there any questions by the members of the Committee?

Now, we have two more men on our list, Mr. Anderson

and Mr. Gray.

I think we are going to take the time and make a clean sweep of it. Mr. Gray.

MR. E. L. GRAY: Mr. Chairman, I have a prepared statement which is short. It has been covered, of course, in part, and in part, I think not.

My name is E. L. Gray. I am attorney and secretary for the Yuba County Water Agency. We understand that the final report of Zinder and Associates has not yet been presented.

However, your Committee hearing is held at this time, and at this time we must report to you that based upon the facts we now have, we are afraid of the proposed intertie with the Pacific Northwest -- and for that reason we oppose the project.

In Yuba and Sutter Counties we worry about floods. 40 persons lost their lives in the flood of '55. Property damage ran into the millions. And we continue to suffer damage to our economy. By reason of the floods of that and previous years, important industries will not locate in our community until this danger has been eliminated.

To save lives and property in our area and to provide for our economic growth, the Yuba County Water Agency has been established. Its main project is a high dam on the Yuba River at Bullards Bar. This would provide a great measure of flood control, at a much earlier date than could be expected from a federal project. It would conserve water runoff, provide water for irrigation and domestic use and would result in a regulated flow of water into the Delat during the rest of the year.

This project is feasible if it can be paid for from the sale of hydroelectric power. Power is not primarily the objective. It is only a means to the end of protecting lives

and property, and conserving water for domestic, industrial and irrigation uses.

Now, upon the basis of the statement of Mr. Sol E. Schultz made on July 15th, it would appear that the only objective of the proposed inter-state transmission line from Bonneville to California is to provide a market for the sale of Bonneville power, which at this time is surplus. The statement lists, among others, the following so-called benefits:

"(a) An increase of 130,000 kilowatts in the supply of low-cost prime power in the Pacific Northwest.

"(b) Revival of the coal mining industry in Washington.

"(c) Substantially reduce (if not eliminate) BPA's revenue deficiencies, thereby alleviating the need for any rate increase.

"(d) Provide an incentive to construct new storage reservoirs in Canada which would increase the amount of firm power available to the Northwest and California until it could be absorbed by the Canadian market. This would provide revenue for Canada, add to the Pacific Northwest's firm power supply and delay the construction of steam-electric capacity in California."

It is difficult for us to see the benefit to California of any of the foregoing. Also the proposed project might encourage in California dependence upon a power supply of a temporary nature. This was made clear in the followint statement before the subcommittee:

"Provision would be made for recapture of such power when it can be absorbed by the Pacific Northwest market. This would serve the double advantage of increasing wholesale power revenues in the Pacific Northwest and delaying the construction of high-cost thermal capacity in California. Canada could proceed at an early date with the construction

"of Columbia River hydroelectric storage and general facilities on the basis that the power and energy from such construction, temporarily surplus to its needs, could be sold to California subject to withdrawal upon reasonable notice."

It seems clear from the statement that delay in the development of California's own hydroelectric resources is considered desirable. We believe that many Californians would disagree with this conclusion. We believe there could be no disagreement however, as to the immediate effect of dumping large blocks of termporarily surplus power in California. It would retard, if not stop altogether, the progress of various districts throughout the State which have made and are making serious efforts to help themselves in the matter of water supplies and flood control. If the power output of these districts and agencies cannot be marketed, their projects must be put in moth balls until the surplus power is taken away to fill the needs of the Pacific Northwest. In areas like Sutter and Yuba Counties this would mean living just that much longer under the threat of the next flood.

I thank you for the opportunity to appear before this Committee.

Thank you very much for your courtesy in permitting me to come back here.

SENATOR JOHNSON: You have a mistake on page 2. That 180,000, I think, should be higher -- oh, I see. That is a quote.

CHAIRMAN TEALE: I am not going to ask your opinion on the main report today.

Next, we have Mr. Anderson, Chairman, Placer County Water Agency.

Mr. Anderson.

MR. L. L. ANDERSON: I want to thank you, Mr. Chairman, for the privilege of appearing here and for your long patience.

We have attached here a map of our county and of our projects. We thought maybe you would be interested in seeing that, which will give you a lot of data.

Mr. Chairman and members of the Committee. My name is L. L. Anderson. I am Chairman of the Board of Directors of the Placer County Water Agency.

The Placer County Water Agency is not as yet completely informed concerning the facts involved in a Bonneville Intertie and the effect of such an intertie on power development in California, particularly Northern California.

Only this month we received a letter from Mr. Eldridge Sinclair of the firm of H. Zinder and Associates requesting a meeting to exchange information concerning both a proposed Bonneville Intertie and the proposed water and power development planned by the Placer County Water Agency. This we agreed to do, and a meeting has been scheduled for September 7, 1960, the next regular meeting day of the Board of Directors of the Placer County Water Agency.

Our engineers and attorneys are now looking into the very complex and involved proposals concerning a Bonneville Intertie and the possible effect on proposed water and power projects of the Placer County Water Agency. Until their study is completed we, of course, cannot testify on the details of a Bonneville Intertie.

We do, however, feel very strongly that any proposed Bonneville Intertie which adversely affects, delays, or interferes with the water development program of Placer County should be strongly opposed.

In order that you may more fully appreciate the position of Placer County as it relates to a Bonneville Interties, let

me briefly outline for you Placer County's water and power development program.

As you know, the Placer County Water Agency was created by the Legislature in 1957. Prior to that time the Board of Supervisors of Placer County considered various means whereby water development could be achieved.

Subsequent in 1957, of course, the Board of Directors of the Placer County Water Agency, who also are the Board of Supervisors, has been pursuing very diligently and actively a program for the development of Placer County through the construction of a water project.

The Agency, whose boundaries are the same as the County's, is responsible for the full development and utilization of the water resources of the entire County. This means, of course, that each section of the County will share in the water supply and the economic benefits of the Agency's water and power projects.

This also means, and most importantly, that the economic benefits of projects which develop Placer County water will inure to the benefit of Placer County and not some remote area.

The Agency also is fulfilling its objectives through local entities. Its function is to assist these entities in their projects and to provide water supplies to them for local distribution.

The Agency's role is to provide a comprehensive water plan for the entire County and to assist in developing this plan by constructing those projects beyond the capabilities of the local agencies or so braod in scope that they meet the requirements of a considerable portion of the County.

This general water development plan proposed by the Placer County Water Agency will:

1. Develop water supplies, storage and conveyance

facilities for domestic, irrigation, municipal and industrial uses.

2. Develop hydroelectric energy for revenue to assist in financing the water resources development of Placer County.

3. Develop recreational facilities.

4. Provide for the maintenance of stream flows and the enhancement of fish and wildlife.

Current plans contemplate a total reservoir storage of 604,000 acre feet, which will produce a firm dependable new regulated American River water supply of 310,000 acre feet per year. The total installed power capacity will be 220,000 kilowatts and the total head developed for power will be 4,324 feet. There will be twenty-six miles of tunnels and the total length of conveyance canals will be fifty-six miles.

We have been actively conferring with the Pacific Gas and Electric Company on our project for almost two years, although discussions with them have been going on for about ten years.

Our relations with them are most cordial and they have reiterated their interest in our project power. Our consultants have intensively reviewed the details of our project with PG&E's engineers and have reached agreement as to the project works.

Not too long ago, Mr. N. S. Sutherland, President of PG&E, indicated that the company would be in a position to accept delivery of our project power in 1966. To achieve this, we will have to move very soon on the remaining procedures leading to construction. What remains is the very important matter of the project power financial details. We believe we are not far apart in this area, and expect a resolution of this important aspect in the very near future.

It is contemplated that the works to be constructed

will be financed through a revenue bond issue. It is easy to see, therefore, the concern of Placer County over power development in California or the importation of power from other sources.

Placer County has a very real and urgent need for water. It has the natural resources to meet this need. If Placer County is to grow, we must develop our water supplies.

The only means we currently have for doing this ourselves is by construction of multiple purpose projects financed to a considerable extent by the sale of power. Without adequate power revenues the project would be byond the capacity of the Agency to finance.

It is important, therefore, that any plan for the development of power in California also include the planned power development by Placer County. We also feel that our proposed project will benefit directly and indirectly all of California.

Thank you very much for permitting me to appear and testify before you. If you have any questions concerning our proposed water development project, I will be pleased to try to answer them. I have with me Mr. Sanford Koretsky, of the firm of McCreary-Koretsky Engineers, our engineers, who also is available for answering your questions.

CHAIRMAN TEALE: Thank you very much, Mr. Anderson.

I think we are all fairly well familiar with the project.

Are there any questions of Mr. Anderson?

Thank you very much.

This concludes this day of testimony. We want to thank everyone else who has been here today, also.

(Thereupon, at the hour of 5:40 p.m., the hearing was adjourned.)

CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

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I, LAVONNE C. WOLFF, a Certified Shorthand Reporter, hereby certify that the foregoing is a full, true and correct transcript of the proceedings had in the above-entitled proceedings, taken on the 23rd day of August, 1960, before the Senate Fact Finding Committee on Water; and that I reported the same in stenotype and thereafter transcribed the same into typewriting, as appears by the foregoing transcript.

Dated at San Francisco, California, on September 14, 1960.

LAVONNE C. WOLFF
Certified Shorthand Reporter

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